# Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIV. NEW YORK, JANUARY 22, 1859. NO. 20.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,), New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns of the United States.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in this city Brooklyn and Jersey City.

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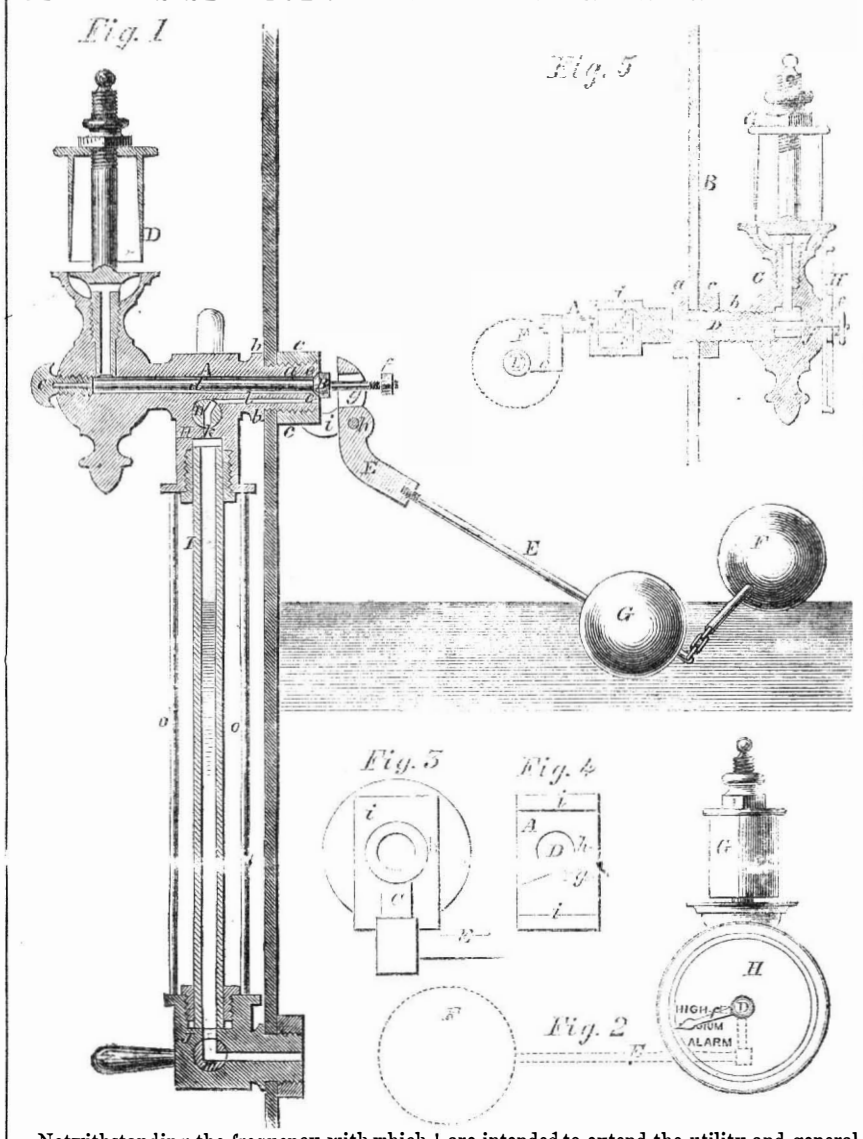
### New Atlantic Steamers--Galway Line.

The difficulties of locomotion are gradually being placed among the things that were, and traveling, whether by land or sea, has become a pleasant recreation. Seldom now do we hear travelers speak of the dangers through which they have passed, their tales being generally of the comforts they have had while crossing this or that ocean, or marching over this or that continent.

The Atlantic has been fairly conquered by steam, and although the iron monsters of the deep have brought the Old and New World comparatively close together, we are on both sides continually desiring to be nearer still. This spirit is the one which founds new lines of steamships and calls absention to fresh points of arrival and departure, by which the time of ocean travel may be reduced. In pursuance of this anxiety, an English capitalist, Mr. Lever, cast his eye on the lovely city of Galway, in Ireland, on one side, and St. Johns, Newfoundland, on the other. Almost before any one was aware, ships were bought, and after a few complimentary receptions on both sides, the Galway line, as it is familiarly called, took its place as a commercial enterprise of some importance.

The passages made have been average ones, and passengers have availed themselves of what was to be a shorter sea voyage, but which, at present, has not been much curtailed. The company, now finding that there is a great chance for making money, are doing a wise thing, by ordering three new steamers whose guaranteed minimum speed is to be twenty miles per hour. They are to be side-wheels, 330 feet long and 38 feet beam; the engines are to be 2,200 indicated horse-power, having three oscillating cylinders, each 75 inches in diameter. If these accomplish all that is expected of them, we shall have to thank the Galway line for bringing London within five days of this continent. The mails are carried from London to Kingston—over 300 miles—in eleven hours; thence to Galway in three hours more, and to St. Johns in four or five days at the outside. We are pleased to see that some ship-builders and owners are thinking and acting in a common sense manner, and, with two suggestions, we wish success to the "Galway line." The first is, that propellers would be cheaper than side-wheels; and secondly, that better discipline must prevail on board their ships than does at present, as many complaints are made by those who have been passengers in the *Indian Empire*, *Prince Albert*, and other ships of this line, upon the want of order and regularity that prevails in them.

## MILLER'S STEAM BOILER ALARM AND WATER GAGE.




Notwithstanding the frequency with which we have explained the causes which lead to boiler explosions, and shown how, by ordinary prudence and attention, they may generally be prevented, yet they are still too numerous, and the annual loss of life from them is great. The change of water from the spheroidal state into steam is, undoubtedly, the great cause of explosion, and this is induced by lowness of water, and the heating of the boiler plates above the water line. In the evidence taken before the jury which investigated the recent boiler explosion at St. Louis, the engineer stated that, when a boiler is liable to "foam," the try-cocks will not truly indicate the quantity of water in the boiler. This is an important fact, for often, when any apprehension is felt as to the state of the water in the boiler, the try-cocks are depended on as the surest test and indicator. It must be evident that, while a simple try-cock gage or indicator may be made by foam to give a deceptive indication, it is impossible for the foam to alter the position of a *float*, for such a device will always rest on the actual surface of the water, and thus truly indicate the level, and if connected with suitable mechanism outside the boiler, it can be made to give an alarm which can be relied upon, whenever the water approaches to a dangerous level. We are led to these remarks by the examination of some improvements that Alexander Miller, of Cleveland, Ohio, has made in the gage which was illustrated on page 44 of the present volume of the SCIENTIFIC AMERICAN. These improvements are intended to extend the utility and general application of these gages, and to cause their action to be so certain that, if the person in charge will but use his eyes or his ears, an explosion will be impossible, and the loss of life from such a cause will be one of the "things that were." These gages have now been in use for some time, and have won the golden opinions of many eminent engineers, as is fully shown by numerous testimonials of their extreme usefulness and reliability.

Fig. 1 represents a sectional view of a combined water gage and safety-alarm, the ordinary glass water gage and safety-alarm gage being connected with the alarm, so as to save one elbow.

A is the casting outside the boiler, carrying the whistle, D, that communicates with the inside of the boiler by a passage closed on its end (which is ground into a valve seat *e*,) by the conical valve, B, upon the rod, *d*. Should this valve by any means get choked up, it can be ground in its seat from the outside by the screw-top, C. The alarm casting is secured into the boiler plate, by the nut, *c*, passing over the screw, *a*, and holding the boiler plate against the flange, *b*, on the outside. To *a* is secured the projection, *i*, that carries by a pivot, *h*, the bent lever, E; a slot, *g*, in which, passing over the rod, *d*, and and bringing the sides of E against a nut, *f*, opens the valve, B, and causes the alarm. The rod, E, carries on its end a small float, G, large enough to sustain or balance the weight of the rod, and this connected by a link, to the larger float, F, that really operates the alarm. The float, F, being thus loosely connected with rod, E, it can swing to accommodate itself to the motion of the water in the boilers, whether the motion be caused by ebullition or by the rolling of a ship. The weight of the ball, G, is not sufficient to open the valve, B, by its own weight, when there is a pressure of steam on, its only duty being to sustain the weight of the rod, when there is no pressure of steam in the boiler. A channel, *l*, is cut or bored through A, which has free communication with the inside of the boiler, and with the glass tube gage, I, by the passage, *k*. The glass tube is secured in H, by suitable packing, and a screw and nut, and at the junction of *l* and *k*, there is a stop-cock *n*, to admit into or shut off the steam from the glass tube. An elbow pipe, J, provided also with a stop-cock, *m*, connects the glass tube with the lower part, or that containing water. The tube is protected from breakage by the rods, *o*. This invention, it will be seen, allows the person in charge to see at once in the tube the hight of the water, and should he neglect to make the necessary observations, when a dangerous point is about to be reached, the whistle will give an alarm.

Figs. 2, 3, 4 and 5 show another invention designed to effect the same end. Fig. 2 being a front outside view of the whistle and indicator, and Fig. 5 a section showing the working parts, Figs. 2 and 5 being diagrams of the various parts. G is the whistle, H a dial, having engraved upon it the words, "high," "medium," "alarm," to each of which, according to the hight of water in the boiler, the finger, *f*, on the shaft, D, points. The piece, A, is secured to the boiler, B, by *a b c*, and the whistle is screwed on to it. The valve stem, D, is turned smaller at the end that carries the finger, *f*, to pass through the hole, *j*, in G, steam tight. The inside of A is of box form, with the sides open, *i*, and provided with a slot or bearing, *k*, through which the interior part of the valve stem, D, passes, and to which is secured the crank or elbow piece, C. From C there runs parallel with the front of the boiler, a rod, E, carrying the float, F.

The operation will be easily understood. The pressure of steam keeps the valve, *d*, of valve stem close to its seat, *e*, in A, and while the water is "high" or "medium," no steam can escape to the whistle; but the mement the water sinks, the float, F, following the level of the waterfalls, and consequently turns the rod, D, causing the finger, *f*, to indicate "alarm," and bringing a projection, *h*, on D, against a cam, *g* on A, the valve, D, is thereby brought out from its seat, *e*, and the steam passes to the whistle and sounds an alarm.

The inventor has applied for patents for these inventions, and any further information may be obtained by addressing him, care of Dr. Seelye, of the same place.

### Atmospheric Phenomena.

A correspondent writing to us from Byson, Ill., states that some peculiar phenomena were witnessed in that place on the morning of the 4th inst., at 9 A. M., consisting of several rainbows intersecting one another, and at every intersecting point there was a bright spot resembling a miniature sun. These bows displayed all the prismatic colors, and were exceedingly beautiful. They continued for about three-quarters of an hour, and then disappeared.

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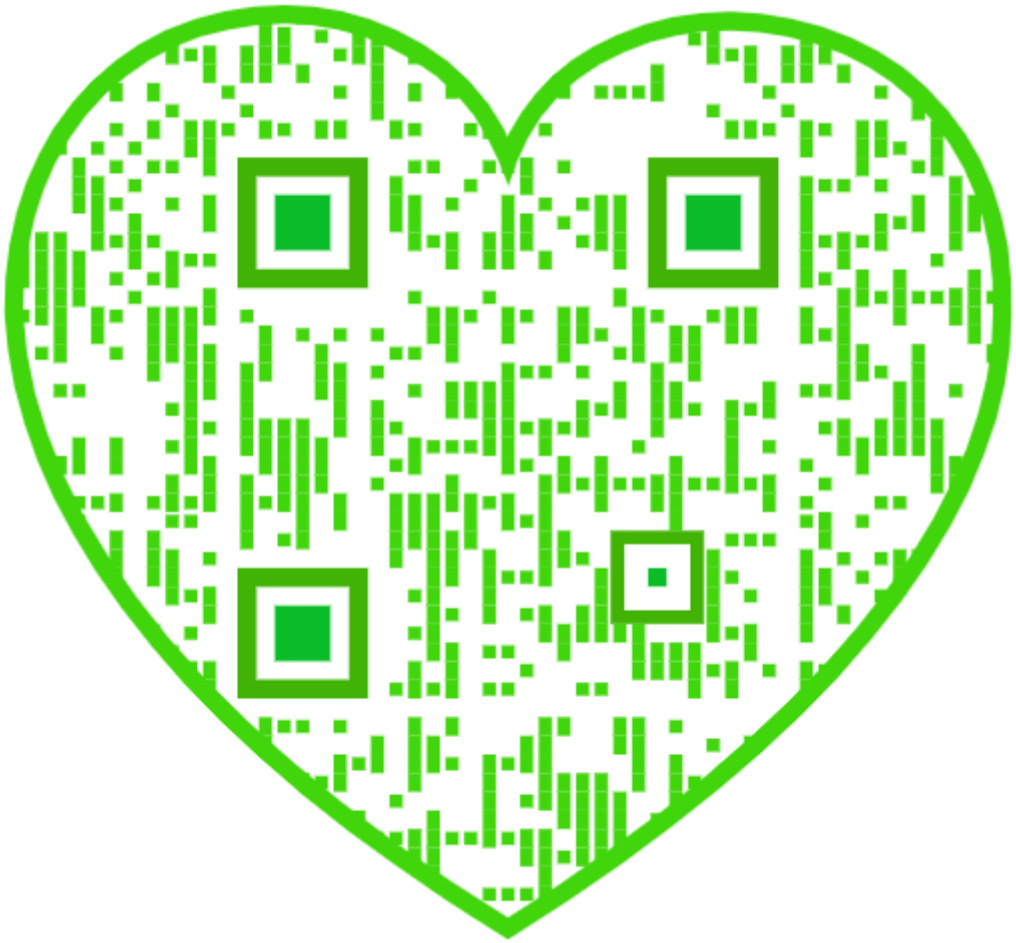

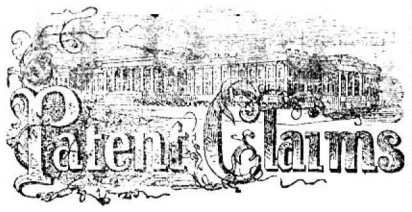


**Issued from the United States Patent Office**
FOR THE WEEK ENDING JANUARY 11, 1859.

*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

COMPOSITION FOR FRICTION MATCHES—Wm. Pagget Allen, of Dubuque, Iowa: I do not claim the use of the general substance, marked as, A, in the specification, as a coating for the tips of matches; nor the combination of phosphorus with earthy substances, to render it less inflammable, nor its combination with glutinous substances to cause it to adhere.

But I claim, first, The combination of phosphorus with the substances marked, B and C, in the proportions and manners, substantially and for the purpose set forth in the specification.

Second, The combination of phosphorus with the substance marked D and E, in the said proportions and manner and for said purpose.

Third, The combination of phosphorus with the substance marked A, in said proportion and manner, and for said purpose.

ROLLER FOR EXPRESSING WATER FROM CLOTHES—John Allender, of New London, Conn.: I claim a roller, consisting of a spirally coiled spring, arranged on a shaft or roller made smallest in the middle, (to allow the spring to yield,) covered with india rubber, or some flexible material, that will yield or bend readily as the spring yields to the cloth, clothes, or other article being squeezed by the rollers.

DOOR SPRING—James Barkley, of Weston, Mo.: I do not claim, broadly, the devices herein employed, as I am aware that many forms and arrangements of these have been used.

But I claim the employment of the spring, B, which shall be provided with a hook, a, at one end, and which shall be secured to the casing at the other by means of two half staples, thus making a spring, which is adjustible to both ends, capable of being detached from either the door or casing in a moment of time, as is specified.

CANTEENS—Benjamin Beers, of New Fairfield, Conn.: I claim the combination with said canteen, of the additional vessel, made by hollowing out a piece of wood and inserting its edge in a groove in the end or head.

METHOD OF SECURING TOGETHER THE SIDES OF CAST METAL COLUMNS—A. J. Bowers, of Richmond, Va.: I claim securing the plates or sides of metal columns together by means of the projections, a a e e, ledge, c, provided with notches, d, and the wedges, f f, substantially as shown and described.

[The object of this invention is to procure a fastening whereby the sides of a cast metal column may be secured together with great facility, and a strong, durable and straight joint obtained.]

WATER CLOSET—Thos. Birch and Lewis Bradley, of Hartford, Conn.: We are aware that various devices have been used for the purpose herein described by the use of water and air valves of different construction.

But we claim the arrangement of the metallic rim, B, arm, C, disk, F, cap, G, lever, Q, in the manner as and for the purpose described.

ARTIFICIAL MANURE—Duncan Bruce, of Paspebiac, Canada: I do not claim the use of burned clay as an absorbent, nor of charred vegetable substances, for the purpose of disinfecting animal matters; neither do I claim making use, for the above purpose, of any mixture of these substances, when not prepared as described.

But I claim, as a new article of manufacture, the manure manufactured by the within described process, the animal matters being first decomposed in the manner set forth, and subsequently disinfected by charred shale, or its equivalent, as described.

SCHOOL DESK AND CHAIR COMBINED—Geo. Buchanan, of Hickory, Pa.: I claim a seat, C, pivoted near its front edge to a stationary frame, and hinged near its rear edge to a movable back, and having its arms pivoted by their rear ends to the movable back, and hinged to the stationary frame, substantially as and for the purposes set forth.

DEVICE FOR SETTING LATERALLY CIRCULAR SAWS—J. D. C. Carpenter, of Cincinnati, O.: I claim the rock shaft, F, connected with arms, e, and acting as an eccentric, or as two cranks, for adjusting the saw shaft, laterally, substantially as set forth.

BURGLAR PROOF SAFE—John B. Cornell, of New York City: I claim combining a cast iron door frame with the wrought iron portions of the frame of a safe, in such a manner that the molten iron, which is afterward, whilst in a melted state, combined with the said safe frame, will form a burglar proof protecting casing around the said door frame substantially as set forth.

LATHE ATTACHMENT FOR FINISHING DENTAL PLATES—Elijah H. Danforth, of Jamestown, N. Y.: I claim the combination of the mechanical devices specified, consisting of the piston, c c, bed pieces, a a, boxes, b b, slides, e e and j, and the crank constructed and operated for dental and other purposes, as described.

And I also claim the adjustable crank, as it is arranged and attached to the specified parts of this machine, as set forth.

SODA WATER APPARATUS—Thos. Daniels, of Toledo, Ohio: I claim, first, The arrangement of the whole apparatus, the sirup cans being elevated above the refrigerator, which is provided with the group stop cock, substantially as set forth for the purposes described.

Second, The arrangement of the tubes, d and G, for conducting the sirups and the water to the top of the ice chamber, without cooling them, and concentrating the cooler portions of these liquids below the ice, near the place of discharge, substantially as described.

METHOD OF SECURING THE CYLINDRICAL BALANCE SPRINGS OF WATCHES—A. L. Dennison, of Waltham, Mass.: I claim placing the cylindrical spring, h, beneath the balance and between it and the fork, and cutting away the upper plate to furnish room for its accommodation, as set forth.

LEWIS FOR ATTACHING TACKLES TO BLOCKS OF STONE—Eugene Duchamp, of St. Martinsville, La.: I claim, as an improved article of manufacture, a lewis, composed of a shell, A, air pump, D, nozzle or tube, B, packing, E, staple, G, and otherwise made as shown and described.

[A semi-spherical metallic shell has a detachable air pump attached to its side capable of exhausting the airfrom the chamber when it is pressed on huge blocks of stone, to which it will adhere by the pressure of the atmosphere, to enable the stone to be elevated by tackle, and thus perform the office of an ordinary lewis.]

ENDLESS CONVEYORS FOR REMOVING EARTH—Saml. Falwell, of Memphis, Tenn.: I do not claim an endless chain or series of buckets or boxes for carrying or conveying purposes.

But I do claim, first, The series of sectional cars, e e, in an endless connection, each car being provided with terminal or track wheels, h, and intermediate wheels, g g, of varying and lesser diameter than the track wheels, and shoulder stops, k k, or equivalents thereof, substantially as set forth.

Second, I claim the combination of such cars, with an upper and lower track and wheels, e c, as set forth.

ELECTRO-MAGNETIC FIRE ALARM APPARATUS—Moses G. Farmer, of Salem, Mass.: I claim the circuit wheel, a, and the crank or handle by which it is actuated, in combination with the key, H, and the electro-magnetic circuit, operating in the manner substantially as set forth, to send a definite signal from a sub-district to the central station.

Second, I claim the method of completing the circuit, when the door of the signal box is closed, through the springs, M and N, as set forth for the purpose described.

DOOR SPRING—John S. Gray, of New York City: I claim the combination of the socket, a b, bolt, c, and hold-fast, f, with the torsion spring, constructed and arranged substantially in the manner and for the purposes set forth.

WASHING MACHINE—J. R. Haldeman and J. S. Haldeman, of Bloomington, Ill.: We claim, first, The arrangement of the springs, F, and supporting beams, E, in connection with the sliding frame, G, that carries the lower series of fluted rolls, H, for the purposes set forth.

Second, The clasp, o, as constructed and operated for the purposes set forth.

Third, The sliding standard, R, or its equivalent, in combination with the rack bar, Y, and pawl, X, the whole being arranged and operated in the manner and for the purposes substantially as set forth.

WASHING MACHINE—Eden S. Howell, of Hope, N. J.: Not wishing to limit my invention to the exact detail of mechanical construction illustrated.

I claim, first, The combination of the live rubber, k, with the horizontal sliding and rotating shaft, G, vibrating pressing lever, H, and ratchet, g, or its equivalent, the whole arranged and operating substantially as described for the purposes set forth.

Second, In combination with the rocking and pressing rubber, K, the perforated rubber partition, E, substantially as described.

Third, The detachable lever, m, and bar, O, substantially described for the purpose set forth.

FLAIL CAPS—Thos. J. Hubbard, of Hamilton, N. Y.: I claim the construction of flail caps, of casting metals in separate parts or sections, with the lip or crescent tongue formed upon the interior thereon as described.

PREPARATION OF RESINS—Edwd. Hunt and Henry David Peebin, of Talford, England. Patented in England April 27, 1858: We are aware that stills and steam worms, capable of distributing small jets of steam, have been before used in a somewhat similar way, for the treatment of oils and fatty matters, and for improving the quality of resin oil, obtained from substances similar to those used by us in the processes described. But such a process has never, so far as we can ascertain, been applied to any such substances as are proposed to be operated upon by our processes, for the purposes of obtaining the resinous and solid products specified as the result of our said processes.

We therefore claim the new articles of commerce specified, as produced by the processes mentioned, or by any similar mode or process, said articles or products not having been hitherto known in commerce or used in the arts.

SAUSAGE STUFFER—R. V. Jones, of Johnstown, Pa.; I am aware that screws have been used in presses of various kinds. I therefore do not claim the screw in pressing or stuffing sausages. But I claim the piston rod and supporting recess, constructed as described, in combination with the pronged nut and screw for the purpose specified.

TREATMENT OF INDIA RUBBER—Henry W. Joslin, of Trenton, N. J.: I claim the use and employment of sulphuret of zinc, either artificial or native, substantially prepared by the aforesaid process described, in combination with india rubber, for the purpose of curing or vulcanizing it in form and manner as set forth, without the use of free sulpher in any way in combination with the rubber.

STUMP EXTRACTORS—John L. Knowlton of Glassborough, N. J.: I claim the lever C, with its catches, G and G', in combination with the hauling chain, H, and springs, M and M', or their equivalents, when the said chain is guided, so as to prevent it from twisting or from moving laterally or vertically, as set forth.

HORSE COLLARS—Oliver Lapreniere, New York city: I claim, as an improved article of manufacture, a horse collar, having its lower part provided with a metallic tube, c, to give form to and hold the packing, and otherwise made as set forth.

[This improved collar does not press upon the windpipe of the horse as he pulls a load up hill, and is a great improvement on the old-fashioned collars, as giving ease to the animal and better draft.]

ROOFING COMPOSITIONS—Henry Lester, of Cincinnati, Ohio; I do not wish to be understood as claiming the manner of applying my composition, or any of the within named ingredients when taken separately. But I claim a composition for roofing and similar purposes produced from the mixture of the ingredients described, in the proportions and for the purposes set forth.

TAPER GAGE FOR CARPENTERS—John Marvin, of Bellport, N. Y.; I claim the employment and use of a conical roller, C, applied to a block or a stock, B, of the guage, and connected with a rack, a, or the pencil bar, A, in the manner shown, or in any equivalent way, so that the roller will be rotated as the gage is shoved along, and the bar, A, moved longitudinally by the rotation of the roller, so as to produce the desired result.

I further claim, in combination with the conical roller, C, the adjustable band, c, and fence, e, applied to the block or stock, B, for the purpose of regulating the degree of taper of the line, h, substantially as described.

[The object of this invention is to obtain a gage that will scribe a line leaving an oblique position relatively with the edge of the "stuff," plank or board, against which the force of the gage bears as it is shoved along and from which the work is to be cut or formed, and one that is capable of being so adjusted that the line may be made more or less taper, as required. The invention is designed for joiners, shipcarpenters, and other artisans, chiefly in wood, and is intended to facilitate the marking or "laying out" of taper work, by obviating the comparatively tedious operation hitherto necessary of marking by a straight-edge or chalk-line.]

METALLIC CARTRIDGE CASES—Edw'd Maynard, of Washington, D. C.: I claim, as a new manufacture, an improved metallic cartridge, composed of a brass cup, combined with an exterior steel disk, substantially as set forth.

INDIA RUBBER HOSE PIPES—Chas. McBurney, of Roxbury, Mass.: I claim, as a new article of manufacture, a semi-elastic composition pipe, compounded of the ingredients and in the proportions, substantially specified, when vulcanized, as set forth.

MACHINE FOR SAWING SHINGLES FROM THE BOLT—Alex. R. McCaig, of Ashley, Mo.: I claim, in combination with a saw hung in a swinging arm, the spur, b, rack i, and sliding bar F, for drawing said saw through the bolt to sever the shingle therefrom, and to trip and allow the saw to fall back for the next similar operation, substantially as described.

I also claim, in combination with a pivoted table for holding the bolt, the shifting bars, R R, arranged and operating substantially as herein described, for bringing the bolt up to the saw in such a manner as to alternately reverse the ends of said bolt from which the buts and points of the shingles are cut, as set forth.

RAILROAD CAR SEATS—Thos. E. McNeill, of Philadelphia, Pa.; I claim, first, Jointing the ends of the arm-rests, I, to the ends of the upright standards, L, at the corners of the seats, and providing their opposite ends with sliding bolts or bars, M, and right-angled plates, P, and half pivots or pins, I', for enabling their attachment, when in a horizontal position, by the bars, H, and their upright elevation, to form a support for the hinged portions, G', of the backs, G, when the seats are swung round upon the crank bars, B, substantially in the manner and for the purpose described.

Second, I claim the combination of the hinged board, T, with the projecting ledges, T', on its surface, with the box-like frame, A'', forming the rest of the bottom, A', of the seat next the end of the car, in which it can be enclosed as described.

Third, In combination with the swinging seats, I claim the box-like frames, N, and the platforms, U V, attached to the same by the cranks, U', and jointed bars, W, arranged and operating in the manner and for the purpose set forth.

[These seats are constructed so that they can swing round on pivots at one of their ends, and the backs can be detached and elevated so as to form berths for sleeping. This is an excellent device, and forms a good sleeping car by night or ordinary one by day.]

STONE-CUTTING MACHINES—Geo. Morgan, of Brooklyn, N. Y.; I claim the arrangement of cutters, I, of gradually increasing length, in such relation to hammers, G, and to a sliding carriage, T, that by the action of the hammers on the cutters an incision is made through the whole length of a block of stone which is placed on the carriage, substantially as and for the purpose specified,

[A series of cutters of gradually increasing length are arranged in frames under hammers, in such a manner that, by the action of the hammers on the cutters, a rip is made through the whole length of a block of stone which is fed against the cutters, and of the depth of the longest or last cutter. The cutters are arranged so that each increases the depth at every blow of the hammer.]

APPARATUS FOR INCREASING DRAUGHT OF CHIMNEYS—Antoine Niel, of Brooklyn, N. Y.; I claim the arrangement of the exterior tube having the expanded conical and cylindrical portions constituting the chamber of compression, and the contracted annular space between the two tubes above the conical part of the tube, c, with the inner tube, the two tubes bearing the relation to each other as herein set forth, and forming an apparatus for improving the draught of chimneys, as described.

BRIDLE BITS—Antoine Niel, of Brooklyn, N. Y.; I claim, first, The combination of the griper bars, constructed substantially as described with the bars of the bit of the horse.

Second, Attaching the griper bars by their double-eyed ends and by the screw nuts to the bars, g. and a, as set forth.

SPECTACLE FRAMES—Theodore Noel, of Memphis, Tenn.; I claim the employment of springs, b b, applied to the frame, substantially as and for the purposes specified.

[The object of this invention is to simplify the construction of the frames of spectacles, and give them a lighter and more graceful appearance; and also to facilitate the insertion and removal of the glasses, that two or more pairs of glasses may be used with the same frame, and one pair being changed for another, as occasion may require. The invention consists in the employment of springs applied in such a manner to the frames, in the place commonly occupied by the joint pieces and clamp screws, that the springs, by their elasticity, will hold the eye-pieces closed upon the glasses, and cause the glasses to be confined in their place till it is desired to remove them, when the said springs permit the eye-pieces to be sprung open far enough to permit the removal.]

RETORTS FOR DISTILLING OILS FROM COAL—James O'Hara, of Pittsburg, Pa.: I do not claim, generally, the use of a stirring apparatus within a retort, as I am aware that such apparatus has been used in retorts for some distilling processes.

But I claim the employment in an upright retort for distilling coal, of a revolving screw, of a circumference smaller than the interior of the retort, so applied, that while by its revolution, it produces a continuous elevation of the central portion of the charge, it permits and causes a continuous descent of the surrounding portion by gravitation, and thus produces a positive continuous and uninterrupted upward and downward circulation, substantially as and for the purpose set forth.

[This invention consists in the employment within an upright retort for distilling coal, in the manufacture of coal oil, of an upright screw of a smaller circumference than the interior of such retort, arranged with its axis in or nearly in the center thereof, and having a rotary motion imparted to it, in such a direction as will cause the continuous elevation of the central portion of the charge of coal, which elevation is necessarily accompanied by the continuous descent of the exterior portion by gravitation, and a circulation of the coal is kept up in the retort, so that every particle of coal is in turn caused to pass through the hottest part of the retort, and all the particles subjected to a similar degree of heat, hence a most perfect distillation is effected.]

GAS BURNERS—Albert Ostrander, of New York City: I am aware that similar compositions of materials have been known and used previous to my use of them, and therefore, irrespective of the application of the composition of felspar, quartz, and abestos, in the manufacture of my gas burner, I make no claim to it.

But I claim the manufacture of gas burners, made of the composition of felspar, quartz, and abestos, having the peculiar formation of the vents set forth.

ARTIFICIAL FORE ARMS—B. Frank Palmer, of Philadelphia, Pa.: I claim, first, Closing the hand by means of a strap operated by an attachment to the shoulder of the opposite arm, substantially in the manner described.

Second, The clamp, H, constructed and operating as described, and applied to the purpose specified.

MANUFACTURE OF SUGAR—Edmond Pesier, of Valenciennes, France. Patented in France March 29, 1858: I do not claim the use of alcohol in the purifiection or crude sugar.

But I claim the treatment of the saccharine juices of plants, in the manner described by the use of alcohol, in combination with other special agents.

ARTIFICIAL ARM AND HAND—B. Frank Palmer, of Philadelphia Pa.: I claim, first, Giving a sinuous course to the flex or tendons of the fingers, by means of the sheaves, for the purpose described.

Second, Opening the fingers, by means of extensor tendons, antagonizing the flexors, by means of springs, substantially as described.

Third, The wrist-joint, constructed as described, of a ball and socket held in contact by cords, Z Z, arranged and operating substantially as specified.

Fourth, Giving a soft and elastic covering to the shaft, V, and the wrist, C, for the purpose of imitating the changes of form which take place in the natural arm, during the movements of the radius and the play of the pronator and supinator muscles, substantially as described.

Fifth, The mode described of attaching the arm to the body.

PEG CUTTERS—E. R. Pease and R. R. Hayman, of Poughkeepsie, N. Y.: We claim as a new article of manufacture the described machine for cutting off or removing pegs and nails from the insides of boots and shoes, substantially as described.

INKSTAND—G. M. Prentiss, of Worcester, Mass.: I claim as an improved article of manufacture an inkstand, having a plunger, E, constructed and fitted as shown and described.

[This is an improved and cleanly inkstand, which will not be liable to run over, or the ink to dry up when not being used.]

CORN HARVESTERS—Isaac Reamer, of Conrad's Store, Va.: I claim, first, The combination of the elastic lower guide, a, with the adjustable upper guide, c, when these parts are arranged for joint operation in the manner described for the purpose specified.

Second, The arrangement and combination of guide, h, and swinging clearer G, for removing the corn from the platform in the manner described.

DETACHING PAPER FROM VULCANIZED GUM—Albert C. Richard, of Newtown, Conn.: I do not claim as new the mechanism described, nor do I wish to be understood as limiting myself to the use of such mechanism exclusively, as the same may be varied without altering the nature of my invention.

What I claim is subjecting the surface or surfaces of vulcanized india rubber, gutta percha, or other elastic gum, sheets, valves, belts, or other objects which have been so vulcanized or cured between, or on paper, and to which the paper adheres to a mechanical process of regular binding and continual elongation, substantially as described, having the continuous effect of drawing or detaching the filaments or atoms of the elastic gum, which adhere to, or which have entered into the pores of the paper, gradually and regularly therefrom, and thereout, simultaneously across the whole width of the surface operated upon, in the manner as set forth, or in any other manner producing substantially the same result.

FRAMING SQUARE—Wm. Ripley, of Edgartown, Mass.: I do not claim the mere repetition of the bevel or miter slots and square arms, as applied to the rule, A, provided with a lip, B.

But what I claim is the improved manufacture of framing square, as made with its bearing ledge, its squaring arms, mitre slots, and mortising slots, arranged together, and with respect to a base rule, A, substantially as set forth.

MACHINERY FOR CILING THE JOURNALS OF LOCOMOTIVES—Stephen Scotton, of Richmond, Ind.: I claim, first, The combination of the weighted shaft, B, the spiral spring, F, and the box, C, with the journal of a locomotive carriage, substantially as set forth.

Second, I claim the metal cup, H, in combination with the box, C, and upright shaft, B, or their equivalents, for the purposes specified.

Third, I claim the nut, J, when combined with the upright shaft, B, and cup, H, or their equivalents, in the manner and for the purposes specified.

TREATING AURIFEROUS AND ARGENTIFEROUS PYRITES—Lewis Solomon, of New York City: I do not intend to confine myself to the specific times and proportions mentioned in the specification, these being merely incidental to and not of the essence of the invention.

But I claim, first, Extracting gold and silver from auriferous and argentiferous pyrites, in the manner substantially as set forth.

Second, The application of wood ashes to the roasted ore during the process of grinding, and of soda ash, for the purposes specified.

GRINDING SURFACES FOR MILLS—O. W. Stanford, of Cincinnati, Ohio: I claim the employment of a system of circular grinding teeth, when arranged in the manner and for the purposes set forth.

I also claim arranging around the outer surface of the disk intercepting V-shaped teeth, to operate in the manner and for the purposes specified.

TRIP HAMMERS—Casper V. Statter and George W. Wilson, of Walnut Grove, Ill.: We claim arranging a hammer, B, in such relation to an anvil, I, by means of levers, E and F, and links, D D, that the same can be operated by means of a hand lever, L, or by foot levers, J J, substantially as described.

And we also claim the arrangement of the hand lever L, in such relation to the foot levers, J, and to the chisel, O, that both the hammer, B, and the chisel, O, may be operated by the motion of the hand lever in the manner and for the purpose substantially as specified.

And in combination with the above described hammer, we further claim connecting the handle, N, of the chisel with the arm, M, by means of an adjustable rod, g, so that the cutting edge of the ehisel may be accommodated to different thicknesses of iron, substantially as set forth.

DESICCATING AND CLARIFYING CANE JUICE—Richard A. Stewart, of St. Bernard's Parish, La.: I do not claim, broadly, the use of sulphurous gas, or sulphurous acid gas in the manufacture of sugar.

But I claim as new in the desication and clarification of cane juice and other liquid or semi-liquid forms of saccharine matter, is disseminating throughout the same sulphurous gas, or sulphurous acid gas, for the purposes set forth

GAS RETORTS—H. K. Symmes, of Newton, Mass.: I do not lay claim to any particular form of retort, neither do I claim the passage, C, for the conduct of the gas from the rear of the retort to its mouth, nor for any other purposes.

What I claim is, dispensing with the mouth-piece of the ordinary horizontal gas generating retort, and dividing the mouth of the retort into two portions, one of which is brought into permanent connection with the stand pipe, the other being employed for the purpose of charging the retort, as set forth.

MANUFACTURE OF CANDLES—Joel H. Tatum, of New York City: I claim, as an improved article of manufacture, a candle, having its stock composed of tallow, stearic acid and gum camphor, with or without beeswax, in about the proportions specified, and the exterior of the candle covered with a compound, composed of stearic acid, gum camphor, and gum damar, or equivalent flux, in about the proportions set forth.

[The object of this invention is to obtain a cheap candle of good illuminating power, with a hard external surface and a combustible wick. The ingredients which are mixed with the tallow are camphor, stearic acid and beeswax, and they greatly add to the beauty and utility of the candle, and its illuminating power.]

MODE OF CONSTRUCTING SLATS FOR BLINDS—Wm. E. Worthen and John J. Althause, of New York City: We claim a sheet metal blind slat or luffer board, made up of the combination of a slit tube, with two thicknesses of sheet metal, the whole being substantially such as before specified.

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HARDENING FATTY SUBSTANCES—Benjamin C. Tilghman, of Philadelphia, Pa. Patented in England May 2, 1857: I do not claim, generally, the process of hardening fatty substances by sulphuric acid, as I am aware that this has been before proposed; but in such cases, the heat employed has been under or above 212° Fah. Now, I have found that the hardening effect of sulphurous acid is very greatly increased by causing it to act upon the fatty substances at more elevated temperatures, preferring from about 350° to 550° Fah., but which may be varied from a little above 212° Fah. to above the distilling point of the fatty substance, and it is to this modification of the process that the part of my claim extends and is confined. I am also aware that it has been before proposed to decompose fatty substances and soaps into fat acids, and to purify fatty substances from mucilage, gelatine, &c., by means of sulphurous acid, and also to subject fatty substances to the action of strong sulphuric acid, whereby sulphurous acid is generated in the fat itself, and I wish it to be understood that I make no claim to any of the above processes.

I claim the hardening of acid and neutral fatty substances, by subjecting them to the action of sulphurous acid at elevated temperatures, either with or without pressure, as described.

I also claim the use of oxide of copper, or its chemical substitutes, to remove from fat acids the sulphuretted impurity, produced therein by treatment with sulphurous acid, as described.

I also claim the methods of preserving the color of white neutral fats, when treated by sulphurous acid at elevated temperatures, by using the sulphurous acid entirely free from air or oxygen, and by using fats pure and neutral, and free from any mixture of acid, rancid or decomposed fats,

TEMPLES FOR LOOMS—Jeremiah C. Tilton, of Sanbornton Bridge, N. H.: I do not claim the mere application of teeth to a spring to be forced away from the temple lip or cloth bearer, by the action of a wedge, or its equivalent, at the time of beating up of the loom, as such is found in the well-known Stillman temple. Nor do I claim the application of a stationary spur plate to a temple, with the pins in the said plate inclined, at an angle, to the breast beam, and in the direction in which the lay beats up, the same being shown in the United States Patent, numbered 9,900, and for the purpose therein mentioned.

But I do claim the application of the cloth bearer carrier to its support by a hinge, arranged in manner substantially as described, that is, so as to allow the carrier and its bearer to be drawn backward under circumstances as described.

CORN SHELLERS—Artemas B. Vant and Arlon M. Cook, of Milford, Mass.: We do not claim a convex wheel, as such, as a somewhat similar one has been used, but operating in a different way from ours.

But we claim the combination and arrangement of the smooth revolving pressure plate or wheel, H, with the convex toothed wheel, B, and guard plates, i and j, when constructed and operating substantially in the manner and for the purposes set forth and described.

HYDROFUZE FABRICS—James Wansborough, of Southwark, County of Surrey, England. Patented in England December 13, 1853: I do not claim the exclusive use of any of the materials, matters or substances mentioned and referred to; neither do I claim the coating or covering of a woven fabric with a flock material, as the same has already been done for many years, though without the desired result in point of durability and utility.

But I claim securing the flocks, or other finely divided substance, after it has been sifted or spread on to the surface, and calendered by applying to the surface thereof a solution of india-rubber, or allied gum, substantially as described.

And I also claim, in combination with the method of securing the flock, substantially as described, the subjecting of the same to a steaming process, substantially as and for the purpose specified.

LOCOMOTIVE ENGINES—Ross Winans, of Baltimore, Md.: I claim the blast equalizing pipe, proportioned to the chimney, and arranged substantially as set forth.

I likewise claim a blast pipe of less diameter than the smoke pipe, and having a bell mouth, in combination with an exhaust nozzle and the bottom on which the sparks lie, substantially as set forth.

SURVEYING INSTRUMENT—Geo. Windle, of Edenburgh, Va.: I claim, first, Attaching the adjusting weight of the magnet case directly to the universal joint on which said case turns and swings, substantially as and for the purposes set forth.

Second, The arrangement of the pointer which designates the number of degrees at which the movable frame and telescope stand, adjusted on an adjusting screw, which has the surface of its head graduated so as to indicate minutes, in combination with a stationary pointer and with an extension formed on the pointer which comes opposite the degrees on the magnet case, substantially as and for the purposes set forth.

STEAM VALVES—John E. Wootten, of Philadelphia, Pa.. I claim the application of the anti-friction roller, L, in combination with a diaphragmatic piston, D, or an equivalent therefor, substantially as and for the purpose set forth.

APPARATUS FOR EVAPORATING—Wm. S. Worthington, of Newton, N. Y.: I do not claim, broadly, any arrangement of fires and flues for heating the sides without heating the bottom of evaporating pans.

But I claim the arrangement of a series of two or more grated fire places, a b c, and communicating passages, f g, and flues, h h, in a casing, c, on each or either side of a pan or train of pans, substantially as and for the purpose set forth.

[The objects of this invention are the economical use of coal as fuel for heating evaporating pans, and the application of heat in such a manner as to prevent the burning of the salt, or substance, precipitated on the bottom of the pan, and the burning out of the pan.]

ELECTRO-MAGNETIC APPARATUS FOR SETTING WATER ENGINES IN MOTION—Moses G. Farmer, of Salem, Mass., (assignor to Wm. F. Channing, of Boston, Mass.): I claim, first, The combination of an electro-magnetic escapement with the cock or water valve, k, and with the detent, Q, of a water engine, separately or conjointly, for the purpose of controlling its motion from a distance, especially in its application to a fire alarm telegraph.

Second, I claim the employment of two or more arms, of progressively increasing weight, in combination with a water engine and with an electro-magnet, or its equivalent, for the purpose of releasing machinery, as set forth; the first of the weighted arms being liberated by the electro-magnet, while the last one of the series releases the machinery, each of the weighted arms being returned to its normal position by the action of the water engine.

GAS BURNERS—Wm. Wright (assignor to himself and Frederick Wright, of New York, N. Y.: I do not claim the reduction of excessive pressure in gas burners by so constructing the burners as to cause the gas to be intercepted and divided into small streams, and to pass in a circuitous direction, as I am aware that there are many gas burners so constructed.

But I claim, as an improved article of manufacture, a gas burner provided with a double-flanged cup, C, having openings, d d, e e, and otherwise constructed, substantially as shown and described.

[This invention consists in a double-flanged cup of peculiar construction, and containing a peculiar arrangement of passages applied within a gas burner, for the purpose of checking any excessive pressure of the gas before its arrival at the tip of the burner, and causing it to burn with a more uniform flame than when such cup is not used.]

AUTOMATIC GRAIN SCALES—Joseph R. Gates, of Indianapolis, Ind., assignor to himself and Alex. Corey, of Shelbyville, Ind.: I claim, first, The lever, h, and spring, q, when used for the treble purpose of operating the cut-off gate, r, discharging or loosening the bottom valve, l, and preventing the weights, e and f, from raising the scale-box, C, and drawing the slide, r, until the bottom, l, is closed, thereby regulating the cut-off and flow of grain, without using the wei ht of the grain while the same is being weighted.

Second, The combination and arrangement of the spring and weight, m, with the elbow lever, k, connecting rod, j, and lever. i, when constructed and operated substantially as and for the purposes described.

MODE OF ATTACHING THILLS TO AXLES—George Kenny, of Milford, N. H., assignor to himself and Josephus Baldwin, of Nashua, N. H.: I do not claim encompassing the bolts, D, in elastic tubes, irrespective of the particular arrangement shown and described. But I claim the combination of the pressing and locking India rubber tube, E, with the eyes, a, a, b, and bolt, D, with its nut, e, substantially in the manner and for the purposes described.

MACHINE FOR SAWING MARBLE—James Lyon, of New York, N. Y., assignor to Jesse J. Davis, of said New York: I claim the arrangement of the reciprocating bar, d, adjustable rollers, f f, adjustable frames, g' g', and diagonally slatted sides, h h, in relation to each other, and to parts that connect with and guide the saws, for the purposes and substantially as specified.

MANUFACTURE OF EMERY-WHEELS AND STICKS—Thos. J. Mayall, of Roxbury, Mass., assignor to himself and Geo. M. Davis, of Boston, Mass.: I claim the employment of vulcanized rubber, tempered with olive oil, as set forth, in combination with powdered emery, or its equivalent, for the manufacture of polishing wheels and sticks, as specified.

ELASTIC DRAW-BAR AND BUMPER—Thos. J. Mayall, of Roxbury, Mass, assignor to himself and Benj. F. Cook, of Boston, Mass.: I claim the described combined draw-bar and bumper, consisting of the elastic cylinder, E, the heads, A A', bars, B, spring, d, and bolt, K, constructed and operating in the manner substantially as set forth.

MOWING MACHINES—Thos. Windell (assignor to J. B. Ford, James W. Shield and H. L. Bridewell), of New Albany, Ind.: I claim, first, The employment, in connection with a single frame-piece, A, of the box, D', which is cast in the manner specified, with axle, P, journal bearings, t and u, and flanges, s s', in one piece, for the purpose of connecting and securing all the gearing necessary for the operation of the machine, as fully set forth.

Second, The spring, c, secured at one end to the front of the outer guard, and playing freely in the opening of the rear of said guard, in combination with the adjusting screw, o, whereby the convexity of the spring shoe is increased and diminished with the elevation or depression of the cutter, in the manner and for the purpose described.

METHOD OF ENABLING MOVING RAILROAD TRAINS TO TELEGRAPH THEIR OWN PASSINGS AT CERTAIN STATIONS—Ernest Otto Pohl, of Philadelphia, Pa.: I confine my claim to the particular apparatus described in this specification, and illustrated in the accompanying drawings, and I claim the use of a self-acting electro-magnetic Railway Alarm Telegraph, actuating reliably of itself without the necessity of human intervention; and arranged and operating in the manner and for the purposes substantially as described.

PRINTING PRESSES—F. O. Degener, of New York, N. Y. Ante-dated July 11, 1858: I claim so arranging or hanging an oscillating bed, with an oscillating platen, in such manner that the motion of one will control the action of the other, so that by their forward movement they shall close and give an impresion, and upon their reverse movement the form shall be inked, and the platen be brought into the proper position necessary for the reception of the sheet, and thus alternate from one of their positions to the other.

Second, I claim the arrangement of an oscillating bed and platen, as described, with the cam to cause the frisket to assume the desired position, so as to hold the sheet of paper while it is being conveyed from one position to the other, all of which is described.

NURSERY BOTTLES—W. B. Potter, of Boston, Mass.: I claim a nursing bottle of glass, having a metallic cap screwed upon it, and a metallic lacteal tube, when said cap is provided with a flange for the reception of the elastic nipple, and the whole is made and put together, substantially as set forth.

GRINDING MILLS—Alfred Proseus, of Philadelphia, Pa.: I claim placing across the recesses formed by the teeth of the shells, or of those of the burrs, or of both, of conical grinding mills, any convenient number of obstructing strips, as and for the purpose set forth.

MACHINE FOR DRESSING HOOPS—Augustus Prenatt, of Buffalo, N. Y.: I claim placing the cutters, c, in the cutter head, B, in such position that the plane of their cutting edge will cross their axis of motion, at an angle of 45° (or nearly so), and also stand inclined to the horizontal plane of their axis, at an angle of 45° (or nearly so), substantially as set forth.

Second, I claim the arrangement of the cutter, g, in the vertically moving grate, F, including the adjustable roller, H, for the purpose of dressing the edge of the hoop, and for giving the hoop any required width, as described.

RE-ISSUES.

SAFETY INDICATOR FOR STEAM BOILERS—Lucius J. Knowles, of Warren, Mass. Patented Feb. 10, 1857: I claim a feed apparatus, controlled by expansion and contraction, in combination with an expansion telltale, placed below the desired water level and above the level to which it would not be safe for the water in the boiler to descend, substantially as set forth.

Second, I claim the described arrangement of the vessels, and as applied and connected with the feed pumps and steam whistle, for the purpose of regulating the pump and sounding an alarm as set forth.

Third, I claim connecting the pipe with the boiler, by means of the feed pipe, as set forth for the purpose described.

LAMPS—Edward F. Jones, of Boston, Mass. Patented May 4, 1858: I claim securing the chimney to the removable deflector, and both of them to the lamp cap, by means of a spring operating in the manner substantially as set forth.

Second, I claim a detached deflector in combination with a chimney, when the chimney is secured to the cap independently of the deflector, as set forth.

DESIGNS.

PARLOR STOVES—S. W. Gibbs, of Albany, N. Y., assignor to Evan Backus, of Stuveysant, N. Y.

INK BOTTLES—Thaddeus Davis, of New York City.

ADDITIONAL IMPROVEMENT.

CROSS-CUT SAWING MACHINE—Albert Heth and Gaylon Hall, of Adams Centre, N. Y. Patented Aug. 24, 1858: We claim attaching the bar or beam to the vertical bar by a pivot, and securing the bar or beam, and beam in a proper relative position with each other by means of the rod, loop, and nut, or their equivalents, so that the bar or beam may be more or less inclined according to the thickness of the log, and the bar always retained in a vertical position.

We further claim, in combination with the oscillating platform, lever and saw-bar, the bar provided with an adjustable weight, and arranged substantially as shown to operate, as and for the purpose set forth.

[This invention relates to certain improvements in a cross-cut sawing machine, for which Letters Patent, bearing date Aug. 24, 1858, were granted to these inventors. The object of the present addition is just to render the frame of the machine adjustable in such a manner that the machine may be applied to logs of different thicknesses, and the fulcra of the lever and platform always retained in a vertical plane; and secondly, to aid by a very simple means the gravity of the saw in feeding itself to its work.]

## American Dentists Doing Business in Europe.

The Paris correspondent of the *New York Daily Times* gives some of the *personel* connected with the American dentistry market in Europe. It may well puzzle one to explain why dentistry in Europe is so far behind that in the United States, and it is singular that, in France, where surgery and the accessories of the toilet are brought to the highest perfection, the art of the dentist should have been left so completely in the rear. Until very lately, the art was ranked among the very lowest of trades; a dentist was in fact but a puller of teeth, and one of the commonest expressions in French is, even to this present day, "*il ment comme un arracheur des dents!*" (He lies like a dentist, or a tooth-puller.) It was not until American dentists settled in France that the art was at all respected, or indeed deserved to be respected. But now we read that—

Mr. Brewster was the pioneer of American dentists in Europe. He settled in Paris in 1836, and soon became the dentist of Louis Philippe, the Czar Nicholas, and other monarchs. He was bought out by Mr. Thomas W. Evans, of Lancaster, Penn., in 1850, who, with his brother Theodore, now continues the business. These gentlemen not only maintain the position ceded to them by Dr. Brewster, but they have extended it. They are the dentists to the Courts of France, Russia, Bavaria, Wurtemburg, and I think of Belgium and Saxony. Besides the Legion of Honor, granted to the elder brother by the Emperor of France, both the brothers have received decorations and rich gifts from other monarchs. They have just built on the Avenue de l'Imperatrice a private residence, which is an ornament to that new and elegant thoroughfare.

James Fowler, formerly a partner of Harvey Burdell, came to Paris four years ago, and went into business with a French merchant as a dentist on the Boulevard des Italiens, the latter furnishing the funds for the establishment of the house. At the end of three years, however, Mr. Fowler sought and obtained before the tribunals a dissolution of the partnership, and at once established a new house in the Place de la Madelaine. Since his residence in Paris this gentleman has made several pieces in gold for the replacement of lost parts, which excited the astonishment and the admiration of the Academy of Medicine and of the entire faculty of Paris. Among these were an entire lower jaw in gold with the teeth affixed, several upper jaws, obturators, &c. Although not new in America, it was the first time any successful atrempt of the kind had been made in Europe; and Mr. F. is now in the enjoyment of a first-rate reputation and practice. M. Preterre, his former partner, obtained a workman from the United States of the name of Fowler, and is continuing the business at the old place under the name of Fowler & Preterre.

Mr. Horner, of Philadelphia, is a partner in the long-established English house in the Rue de Luxemburg, which now bears the name of Stevens, Watson & Horner. This is the largest and richest dental establishment in the world, its income reaching $60,000 a year. Gold work, however, has only been introduced into the house since the entrance of Dr. Horner; previously, their artificial pieces were made of hippopotamus entire, and decayed teeth were filled with amalgams—the ancient French and English systems.

Mr. Gage, formerly of Mobile, has also established himself in Paris as a dentist, and like the other, is doing a good business.

Mr. Potter, an American dentist, who has practised in Bombay and in Lisbon, has been for some years established in Paris, and lately took into partnership a dentist of New York, Mr. Crane.

Dr. Parmly, formerly of New Orleans, an elder brother of Dr. Eleazer Parmly, of New York, has been practising dentistry for three years past, upon the children in the schools of London and Paris, till an attack of typhoid fever, followed by partial paralysis, disabled him from the active pursuit of his profession. He continues to reside in Paris, however, and gives advice to famllies and schools in regard to the care of the mouth in young people.

A gentleman who announces himself to the public as an American dentist, Dr. Koth, "formerly of the United States, late dentist to her Majesty the Queen of Spain," has established himself in Paris, within a month.

As I was passing rapidly in a carriage, a few days ago, through an obscure quarter of the Faubourg de St. Germain, I had a hasty glance at a sign which had evidently just come from the painter's hands, and which bore the words, "*Dentiste Americain*," preceded by a name of the purest Gallic origin. So, you see how the current is running.

So wide-spread is the reputation of the American dentistry, that the teeth of nearly every monarch in Europe are filled, drawn and replaced by Americans, or *soi-disant* Americans. Thus, as I have before mentioned, the Evans' of Paris are the dentists to the Courts of France, Russia, Bavaria, Wurtemburg, and some other smaller States. At Rome, Dr. Burgess, an American, is the principal dentist; at Madrid, it is Dr. McKeehan, another American. The principle dentist of Berlin is Dr. Abbott, of Bangor, Maine, while the Court dentist is a German who studied in America, and who calls himself in consequence an American dentist. At Vienna, where it is almost impossible for a foreigner to get permission to do business, Dr. North, also of Maine, has rapidly gained the first position among the aristocracy. When he first went to Vienna, Mr. North was obliged by the police restrictions to avoid giving any publicity, either by advertisements or by a sign at the door. While stowed away privately in the upper part of a house, continually wondering whether his enterprise was going to fail or succeed, he was one day surprised at receiving a visit from Prince Lichtenstein, who came to get some work done. The American complained of the rigors of the police, and the prince said to him, "Never mind the police; take a house to suit you, put your sign out and if they trouble you, come to me." Mr. North did as the prince advised him, the prince sent his daughters and other relatives and acquaintances, and from that day the fortune of Dr. North was a fixed fact. He numbers in his protectors not only the Lichtensteins, but also the Metternichs and the Schartzenbergs.

In St. Petersburg, the aristocracy employ two Irishmen, brothers, who studied their profession with Dr. Brewster at Paris, and who call themselves American dentists.

The principal dentist at Hamburg is Dr. Cohen, who studied in America, and calls himself an American dentist.

The brothers Tetlander, who studied dentistry in New York, do the Court and principal business in Stockholm and Christiana, the capitals of Sweden and Norway.

There are a few other dentists scattered through the German Confederation, Germans by birth, who received their professional education in the United States, and who call themselves American dentists.

At London, Mr. Rann, an American dentist, has rapidly reached a large practice, in exclusively aristocratic families. Another American, whose name I forget, has also arrived at a large practice in London. At Manchester there has been an American for a good many years. This closes the chapter on dentistry.

Two American physicians are in practice in Paris, Dr. Bigelow, of Boston, and Dr. Beylard of Philadelphia, both graduates of the School of Paris. The latter gentleman, however, is of French origin, he was two years house physician in the wards of Dr. Trousseau, at the Hotel-Dieu. Both these gentlemen are doing well, and fortunately for the small American colony in Paris, their business is not confined exclusively to their countrymen.

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# New Inventions.

### An Unjust Tax.

The government of the United States in the nineteenth century continues to make an Englishman pay $500 whenever he solicits a patent for an invention in this country—all other foreigners only paying $300 for the same privilege. This, in the estimation of all liberal men, is an indecent discrimination—a disgrace to our statute books—one that ought to be wiped out at once. If there was any gumption in the Congressional Patent Committee, this disgrace would not be tolerated another month. We despair of any change at present; there is no one to lobby it through, therefore there is little or no chance of its success.

### California Inventors.—Signing Drawings.

We have been compelled to send out several sets of drawings to our California clients after their specifications had been returned to us with the proper signatures and oaths. This has caused much delay and dissatisfaction, and we regret it; but the difficulty lies wholly with the late odious rule promulgated by the Commissioner of Patents, which requires that all drawings must be signed; and this, too, in face of the statute, which expressly declares that the drawings constitute a part of the specification. The specifications in the cases above referred to were sent out to our clients some time before the rule was promulgated, and we tried in vain to get the Commissioner in such cases to allow the suspension of the rule, but he was inexorable, it was of no use; hence the great delay in getting the cases properly before the Patent Office. This public explanation we consider due to ourselves, lest there should be dissatisfaction felt at our negligence in the matter. The rule, once obsolete, and always useless, works badly. One case now before us, returned from Texas, the drawings were almost ruined in transit, so that we scarcely believe the Patent Office will receive the case. We are not to blame; and in spite of our earnest endeavors to get the rule suspended, it is still rigidly enforced in all cases.

### Another New Light.

Several correspondents have written to us concerning an extract which recently appeared in the *Commercial Advertiser*, of this city, from its London correspondent describing a new and extraordinary light, lately patented in England by the Hon. W. E. Fitzmaurice. It is stated that it was exhibited at Cherbourg, France, during the recent visit of the Queen of England to that famous fortified city, and that while it is as brilliant as the Drummond or calcium light, the materials of which it is made are exceedingly cheap. A light equal to that of 500 street lamps can, it is said, be produced for 87 cents, which will last for twelve hours, and a jet equaling eight sperm candles to last for twelve hours costs only 8 cents.

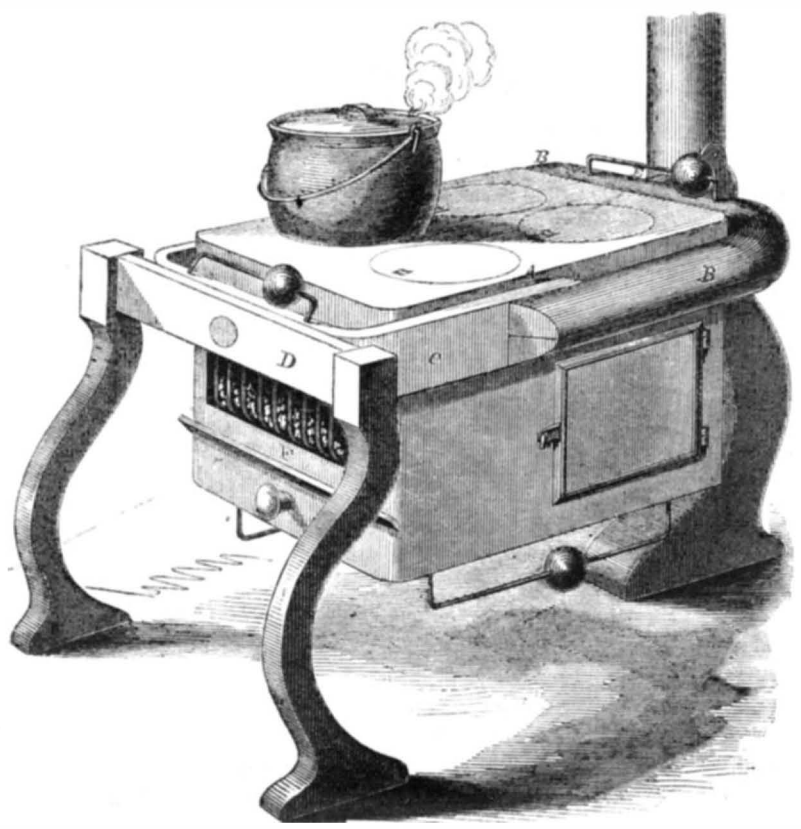
We have not been able to obtain any reliable information about this light. It is not very safe, however, to place full faith in the statements of those who write upon such questions as mere *news* correspondents, because in general they are not acquainted with science or the arts, and are not therefore capable of forming correct opinions.

### Improved Cooking-Stove.

The rocking motion of ships, while traversing the "briny deep," interferes considerably with the draught of the cooking-stove, and with the safety of the contents of the vessels placed upon it to be cooked, and many a ship's cook has lost his temper, and the crew their dinner, by the ill-natured waves of old Neptune. To obviate all this, and to preserve the articles on a stove and the stove itself in a state of equilibrium, whatever be the motion of the ship, D. S. Beardsley, of New Haven, Conn., has invented the subject of our illustration.

The stove, F, as seen in the engraving, is hung in hollow gimbals, A, which form the flue and communicate with the smoke-pipe, B, also hung by a hollow joint in the chimney, E, and by a solid bearing in the front frame, D. This, it will be seen, forms a universal joint or gimbal ring, enabling the stove to maintain its parallelism whatever be the angle of the ship, and the stove can be provided with the usual apertures at the top to admit of pots and pans, and an oven, together with the common appliances of a ship's cook-

## BEARDSLEY'S SHIP COOKING-STOVE.




ing-stove. Should it be necessary to destroy the balance of the stove by placing a kettle or pan on one corner, there are a series of balance weights that slide in rods, two on the gimbal ring and smoke passage, B, and two more on the bottom of the stove itself, by adjusting these weights the balance can be preserved, and the contents of the cooking vessel and the vessel itself will be safe from accident from the motion of the ship at sea.

This invention which should be adopted generally by ships as safe, convenient and economical, was patented Jan. 6, 1857, and any further information may be obtained by addressing the agents, or O. H. Corsa, 383 Third avenue, New York, or B. S. F. Corsa, of New Haven, Conn.

## WARLICK'S BEDSTEAD.

*Fig. 1*

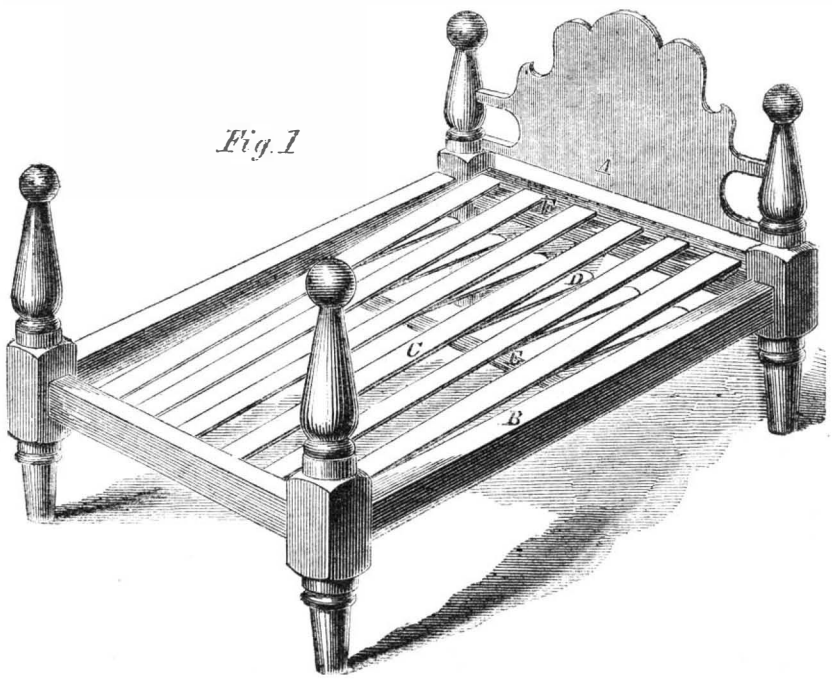
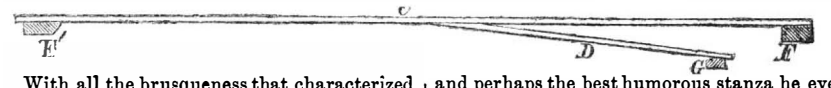



*Fig. 2*




With all the brusqueness that characterized that great lexicographer, Samuel Johnson, and savage as he was when opposed upon any of his favorite theories and ideas, he had yet an amount of learning, importance, honesty, and even geniality, to make him admired by his greatest enemies and beloved by his friends. There is one feature of his character which is worth our while to notice, and that is his humor and fondness of a good bed, and perhaps the best humorous stanza he ever wrote was addressed to a bed, commencing—

"In bed we are born, in bed we die,
In bed we laugh, in bed we cry"—

And he concludes by showing the necessity of a bed as an item in the sum of human happiness. For this fact, therefore, we have this great authority, and we venture to add that for a bed to contribute, by the rest we enjoy thereon, in any way to our happiness, it must in itself be comfortable and pleasant. Such a one is the subject of our engraving, the invention of Noah Warlick, Jr., of Lafayette, Ala., and is a spring bedstead of improved and simple construction.

Fig. 1 is a perspective view of the bed, and Fig. 2 is a side view of one of the slats.

The head and frame of the bed are seen at A B, across which pass the pieces, E G. The slats, C, are attached to two end pieces, F F′ To each slat there is a piece, D, attached, as seen in Fig. 2, which, when the slats are placed on the bed, rests loosely on the cross-piece, G, which forms a spring to the slats, thus cheaply forming a spring mattress or bottom, without any complicated parts or any arrangement difficult to be put together.

It is a most simple and efficient device, and as at a low price a spring bed can in this manner be made, and the invention deserves to come into very general use. It was patented Nov. 16, 1858, and further particulars can be obtained by addressing the inventor as above.

Rights are for sale by B. E. Meyer, 347 Broadway, this city, and he will also be happy to give any information concerning this bed.

### Saltpeter—Nitric Acid—Purifying Oils.

All common coal oils have a most offensive odor, which is a great objection to their use by most persons, and were it removed they would certainly be more acceptable. This fœtid smell can be removed by employing nitric acid as a purifying agent, and at the present prices at which such oils are selling, the manufacturers of them can well afford to use it as a substitute for the cheap sulphuric acid. Nitric acid possesses the quality of deodorizing all fœtid oils, but it is too high in price to use for such a purpose. Were saltpeter more abundant, this acid could be made at much less cost, as it is the source from which it is obtained.

Oils of the same sub-spirituous character as those obtained from coal and tar can be manufactured from grease and coarse animal oils by submitting them to slow distillation at a comparatively low temperature, and they can be burned in the common carbon oil lamps, but they have a most offensive odor also. Nitric acid could remove this, and convert the repulsive oils into fragrant burning fluids.

The New York *Evening Post* of the 11th inst. contains an excellent article on coal oils (in which the information on tar oils on page 118 of the present volume of the Scientific American is embodied), but it contains one error in reference to a mixture of coal oil and camphene. It states that this oil bids fair to become a popular illuminating agent, but "it is highly explosive." This latter statement is not correct. If it contained alcohol, it would come under that definition, not otherwise.

The *Post* justly condemns the common oil lamps as being clumsy and inconvenient for domestic purposes.

### Earthquakes.—Tenacity of Life.

At the Royal Institution, London, Dr. Lacaita recently delivered a lecture on the earthquakes of southern Italy, and stated that during the last seventy-five years the kingdom of Naples had lost 110,000 inhabitants by such calamities. In 1783, a young and beautiful girl was buried under some ruins caused by a great earthquake, and was dug out alive after eleven days, during which she had counted the days by a single ray of light, which reached her through a crevice. She lived for nine years afterwards, but was always sad and gloomy. In the earthquake of December, 1856, two little girls were buried in the ruins of a house; one died, but the other was disentombed alive after eight days, and she still lives. A donkey which had been buried for fifteen days was dug out alive; two mules after twenty-two days; and two pigs after thirty-two days.

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Scientific American.

NEW YORK, JANUARY 22, 1859.

## REMOVAL.

On or about the 1st of February next, the Publication Office of the SCIENTIFIC AMERICAN, and the Patent Agency Department connected therewith, will be removed from 128 Fulton street to the spacious offices in the new building, Nos. 37 Park row and 145 Nassau street; the principal entrance being on the eastern side of the City Hall Park. This change we find necessary in order to meet the continual growth of both departments of our business; and we shall expect, at the time above specified, to show our friends, and such of the public as may feel disposed to call upon us, the most complete and thoroughly organized establishment of the kind in the world.

## McCormick's Reaper Patent Extension.

The patent granted Jan. 31, 1845, to C. H. McCormick, of Chicago, Ill., for an improvement in Reaping Machines, expires on the last day of this month, and application has been made by the patentee to have it extended for seven years from that date. Several correspondents have written to us asking why we have not come out and opposed this extension, giving as a reason, that as we have always been opposed to monopolies, they wonder why we have been silent regarding this important case. It is true we always have been—and always intend to be—opposed to *unjust* monopolies, but our correspondents do not seem to know the position which we occupy in regard to this and all similar questions. We have always publicly opposed the extension of patents by special acts of Congress, because such legislation is *ex parte* and contrary to the spirit of our institutions. It is a very different thing, however, when the application for the extension of the patent is made under the laws provided for this very purpose by Congress itself, and when every application is judged by the principles of law and the testimony brought forward, for and against it.

The Patent law, section 18, Act of 1836, provides that a patentee may have his patent extended for seven years from the expiration of his first term, provided he has not been sufficiently remunerated for its use. To obtain such an extension he must show proof of the value of his invention, and the amount of remuneration which he has received; and all those opposed to the issue are notified to appear and show cause why it should not be granted. After a fair hearing on both sides for and against the extension, the Commissioner of Patents decides upon the testimony presented whether he will refuse or allow the extension. This is the law, and while it exists, we are bound to respect and obey it, and can present no obstruction to its execution. The Commissioner is the most competent person to pronounce judgment in such cases, because he has, or should have, all the evidence on both sides upon which to predicate his decision. There is, therefore, a radical distinction between this application for extension and the one sought to be lobbied through Congress by the same claimant. On page 325 of Vol. XII. of the SCIENTIFIC AMERICAN, we gave full expression to our views upon this subject, as applied to the extension of Goodyear's India Rubber Patent, so that we need not now repeat them. We will, however, present a few observations in reply to some of the reasons which have been submitted to us why this patent should not be extended.

First, It is said, "this is not McCormick's invention, as was clearly proven in the trial between him and John H. Manny, and others, where the reel and divider was the subject of litigation."

If this is true, those who are opposed to the extension, have the right to present such proof, and will be guilty of neglect if they fail to do it, and if the point can be established the Commissioner will refuse the extension.

Second, "McCormick has been amply remunerated for all his expense."

He must prove that he has not been so rewarded, so the *onus* of the question is thown upon the petitioner, while those opposed to him have also the privilege to submit counter proof. Mere yeas and nays will not suffice. Figures and facts must be produced to establish every point.

Third, "No farmer who has a reaping machine, unless it is McCormick's, can use it, if this case is extended; and it will be one of the most complete monopolies ever established."

There is great force in these reasons, and they appear to bear the impress of a truthful conclusion. According to a late re-issue of this patent, the claim seems to cover every reel device for effecting a division of the grain to be cut from that which is left standing; and if this extension is granted, other makers of reaping machines and farmers will have to look out for lawsuits. They will have the right to prove that it is not McCormick's invention, but rather than enter into a judicial contest most of them will submit, although believing themselves wronged thereby.

Mr. McCormick claims, we understand, that his invention is worth $45,500,000 to the country; that he has made about 23,000 machines, and has only received about $200,000 for them, $90,000 of which went for materials. He has therefore made a large margin for special pleading before the Commissioner, and those who are interested in opposing the extension, must be active in getting their remonstrances into his hands before the 27th inst.

The case is an important one, no doubt, and it is well for all concerned that it comes before the office at a time when its Chief Officer is so well qualified to adjudicate upon it.

## Freight Railroads Wanted.

When it was first proposed to construct a canal through the interior of New York State, Col. John Stevens, of Hoboken, the inventor of tubular boilers, and a gentleman of great mechanical genius, suggested the building of a great central railroad as a substitute. Had his idea been carried out, our country would have had the honor of being the parent of the railway system. The canal, however, was constructed, and proved to be a most successful and beneficial undertaking, and it was not until many years afterwards that a single line of railway was laid in our country. It is impossible to tell how different the results would have been, had the proposed railway been adopted; but it is now a matter of fact and history, that since railroads have been introduced, they have nearly monopolized the whole business of carrying passengers to and fro, through the interior of our country. For this particular purpose it is universally acknowledged they possess an advantage over all other traveling systems, but it is denied by most persons, and some who have a very high reputation for engineering ability and experience, that they are adapted for the transportation of very heavy freight. This opinion, we think, is correct, as it regards the operation of railroads according to their present construction and management, but this does not militate against the principles of railroad economy for such purposes, under conditions of a different character. We believe that railroads may be constructed and operated economically for the purposes of carrying heavy freight.

In reference to superior speed, with light draughts or loads, railroads have surpassed all early expectations regarding them, and if they do not carry heavy freight with profit, it is simply because they cannot combine two opposite qualities under one system. It is just as preposterous to expect them to possess the qualities of speed and heavy draught combined, as an animal to excel as a racer on the turf and a draught horse in the furrow. The great expense incurred in operating railroads is for wear and tear, which is enormous, owing to unstable and ill-constructed tracks, and the great speed of the trains. Were our railroads constructed as permanently as those of Great Britain, it is estimated that more than thirty per cent of the working expenses would be saved annually, and we think they can be so constructed, that eighty per cent of these may be saved. The expenses for wear and fuel of railroads increase according to the square of the speed; thus, if on a railroad running at the rate of fifteen miles per hour, the speed is doubled, the fuel required will be four times as much as formerly, and the other expenses, such as wear and tear of rails, locomotives and cars, in the same proportion, and the liability to accidents will be increased in a still greater proportion. A locomotive on a straight line of good double track (broad gage) has run at the rate of forty miles per hour drawing 100 tuns, engine included, with 1,280 pounds of coke for fuel. By reducing the speed on such a railroad to five miles per hour, which is greater than that on the canals, the working expenses (leaving out those of friction which only double with the velocity) would be reduced sixty-four times; that is, a locomotive which will draw 100 tuns forty miles in one hour, with two cords of wood, will draw a like load 2,660 miles at the rate of five miles per hour with the same amount of fuel. We are but in the infancy of railways yet; the time will soon arrive when broad level and heavy tracks will be laid between all our large inland cities, for the purpose of carrying heavy freight exclusively, and they will do so economically. Such railroads are wanted now, as the expense for carrying freight on our present imperfect railroads is far too high, and merchants have just cause for complaint on this account.

The foregoing remarks are for the purpose of directing the public attention to this important question, and the sooner this is accomplished, the sooner will the results predicated be achieved.

## Highly Important Patent Suits.

### EIGHT-WHEEL CAR SUIT.

The case of Ross Winans against the New York and Erie Railroad Company, for a patent covering the eight-wheel cars, which was tried two years ago by Judge N. K. Hall, in the Circuit Court of the United States, at a term held at Canandaigua, in which a judgment was rendered against Winans by a jury, under the ruling of the court, and then appealed by him, was on Monday, the 10th inst., decided against Winans in the Supreme Court of the United States. The highest judicial tribunal affirmed the judgment of the Circuit Court. Thus ends one of the most important patent cases that was ever tried in this country, involving as it did in its issue millions of dollars, and affecting directly every railroad company in the United States.

The decision establishes the fact that Gridley Bryant, formerly Superintendent of the Quincy Railroad, Boston, and now of Scituate, Mass., and Horatio Allen, formerly chief engineer of the South Carolina Railroad, and now of the Novelty Works, New York, were the first originators of the eight-wheel cars, now exclusively used on the railroads in this country, and destroys the only eight-wheel patent ever granted for originating the eight-wheel car—the one to Ross Winans, of Baltimore.

### SEWING MACHINE SUIT.

In No. 16 of the present volume of the SCIENTIFIC AMERICAN, we published a synopsis of a decision on questions of law raised in these cases, and mentioned that the cases had been argued on the merits, and were still held under advisement by the court. A decision has now been rendered on the merits in favor of what is known as A. B. Wilson's Feed Patents, and injunctions ordered restraining the defendants from further improvements.

These suits were upon two re-issued patents for improvements in sewing machines—one dated January 22, 1856, and the other dated December 9, 1856. The former contains four claims. One claim is for the method of causing the material to be sewed to progress regularly by the joint action of the surfaces between which it is clamped—that is, stitch by stitch, and in such manner as to allow the operator to turn the cloth at will while the sewing is going on, to form seams of any desired irregularity of curvature. Another claim is for holding the material to be sewed at rest by the needle, or its equivalent, in combination with the method of causing the material to progress regularly. Another claim is for such an arrangement of one of the feeding surfaces in relation to the needle that it will strip the cloth from the needle as the needle is retracted after forming a stitch. And the fourth claim is for such a combination of one of the feeding surfaces with some other part of the machine as to admit of its being removed from the other surface, and replaced at will to facilitate the putting in and taking out the material to be sewed.

The other patent contains a claim for a combination of a platform to support the material to be sewed, a sewing mechanism to form a seam by a succession of stitches, and an automatic mechanical feed by which the cloth is grasped, but to which it is not attached, and in which it can be turned laterally at will.

The decision rendered by the court was in favor of the plaintiffs, Messrs. Wheeler & Potter *vs.* Steadman & Holland.

The case was ably argued on both sides—for the complainant by Ralph I. Ingersoll, Roger S. Baldwin and George Gifford, and for defendants, James T. Brady and Edward N. Dickerson.

Mr. Gifford's argument—which is an able one—has been sent to us in pamphlet form.

## India Rubber Patent.

An unsuccessful attempt was made in the House of Representatives, on the 7th instant, to bring up the report of the Committee of Patents in favor of the extension of Chaffee's India Rubber Patent. Mr. Washburn, of Illinois, and Mr. Jones, of Tennessee, objected to the bill, therefore, under the rule requiring a unanimous consent, it could not be brought on. It strikes us that the Committee of Patents in the House would be doing the country much more service by attending to the acknowledged defects in our Patent system than in undertaking to revive defunct Letters Patent which belong now to the public. This, however, is a mere matter of opinion, and we suppose, should we press the inquiry into the matter, we would be told that we do not understand the temper of the House, or some other equally frivolous excuse for evading important issues.

## Tardiness at the Patent Office.

We are having inquiries by every mail from applicants for patents, as to the cause of delay in the issuing of their patents

In reply to such inquiries, we can simply say that the Patent Office is so overcrowded with business that its work has latterly accumulated somewhat, and that, while some of the classes of cases are acted upon almost immediately on presentation to the Office, the Examiners in other classes are nearly three months behind in their examinations.

This delay ought not to exist in any department, with the present force of Examiners, and we trust Commissioner Holt will see to it, that every case which has been before the Office for six weeks may be acted upon immediately.

Professor Mitchell, of Cincinnati, is lecturing on astronomy in this city.

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### The Cigar-Shaped Steamer--Another Letter from its Builders.

MESSRS. EDITORS—We notice in the SCIENTIFIC AMERICAN, of the 11th ult., your answer to our communication published in your paper the week before. As we hope to have the vessel ready for sea in a few weeks, many of the points under discussion will be soon practically demonstrated. But there are some which require considerable time and experience to determine conclusively, and the further discussion of such may not therefore be without interest and practical utility.

The entire abandonment of sails in sea-going steamers is certainly a very important invention, and a striking feature in our plan of vessel; but we have adopted this invention from a conviction that the same pains and expense which are now usually divided between two modes of propulsion—sails and steam—will, when directed solely to one of them, secure increased safety, greater certainty of action, and shorter passages than have heretofore been realized. We are of opinion that the abandonment of sails and their usual appendages is essential to the complete development of our plan, and that the present form and appointments of our vessel, divested of the incumbrance of sails and their appendages, will, by the absence of sails and top-hamper, be very materially better guarded against casualties when going at high speed in rough weather at sea. And even if it should happen that *all* the propelling power should be disabled, we are of opinion that, from the plan of the vessel, the wind and waves would have less hold upon her, and that she would be infinitely less liable to danger from water entering her in a storm than a ship of the ordinary model. The only contingency, therefore, to be guarded against is the loss of *all* means of propulsion by steam; and to meet this, it is to be observed that we are double-rigged with steam power as compared with ordinary steamers, including rudders. The improbability that this double rig will both fail during the same passage not only increases the chance of our being always furnished with propelling power as two to one in a comparison with a single rig, but even in a much greater ratio.

In your remark upon the insufficiency of the sails proposed by us in our last communication, to keep the vessel's steerage, you have probably lost sight of the very superior lines, and consequent easy propulsion of our vessel, which we think will serve not only to render her perfectly safe, but mainta in at least half the speed of ordinary steamers when using sails.

To appreciate this properly, it must be borne in mind that the water lines of our vessel are not only unprecedently fine for a sea-going steamer as high up as her medium flotation, but the water lines which are brought into play above this medium line of flotation by rough weather are vastly superior, as compared with anything that has been had before.

You remark, "But why this peculiar form should be better adapted than a safer one, for an entirely iron constitution, we do not see." We presume you mean by "safer one" a vessel of the ordinary form and construction. The form of our hull renders it so nearly, if not quite, self-sustaining without a frame, that the deck, bulkheads and other internal portions being constructed of iron, may be so arranged as to be perfect substitutes for the usual iron framing in iron vessels, the saving of which iron framing more than compensates for the difference between iron decks and other internal fixtures as compared with wood, and the absence of which iron framing affords material facility for putting in such iron inside finishings in such a manner as to increase with facility the number of water-tight compartments. In ordinary vessels, notwithstanding the decks and other interior parts of the vessel may be constructed entirely of iron, a frame is required to support the outer shell; and therefore ours has not only the advantage in point of economy of construction, but also in facility of construction, taken as a whole, when constructed entirely of iron.

In reference to your objection to the position of our propeller, and your apprehension that "it will therefore carry dead water just behind the wheel, and cause negative slip," we reply that we think, on the contrary, our wheel is in the best possible position to guard against any drawback from dead water, it being situated exactly where the water is less disturbed by the vessel at the moment when it is acted upon by the wheel than in any other part of the length of the vessel; and we are content, for the abutment of our propelling power, to use water as nearly quiescent as may be when the propeller begins to act upon it, and these results, we think, will be best accomplished by the present position of our propeller.

In this connetion, you remark that screw-propellers "with fine lines aft are faster than those with full lines, and swift fish have always long tapering extremities in front of their propelling agent."

We think we are entirely safe in claiming that our vessel has finer lines aft than any propeller or other ocean steamer heretofore built; and we confess we are at a loss to understand how we have diminished her chance of speed by making her lines equally good forward. If we understand you aright, you maintain that we should have increased the fineness of our lines aft, at the expense of less fine ones forward, by carrying our largest diameter forward of amidships. We are aware of no principles in science, or facts deduced from experience or practice, that lead to the conclusion that equally good lines are not as advantageous forward as aft. You cite the forms of birds and fish as authority for a different conclusion, without entering into the inquiry whether the authority you have invoked would, if critically examined, support the theory you have set up. It is sufficient to say that it is probable that the forms both of fish and birds were determined not purely with reference to ease or swiftness of movement through the air or water, but with regard to other objects beside which nature took into account. If the precedent set by nature had been held as conclusive, and not to be departed from, we should never have had wheels to common or railroad carriages. The swiftest courser that speeds the surface of the earth is outstripped by a contrivance wholly different in its mode of locomotion from that supplied by nature and its analogies.

You object to the size of our propeller, and cite the limited size of the ordinary screw-propeller as its great advantage over the paddle-wheel. The ordinary propeller, with all its accompanying properties, must, of necessity, be small in proportion to the size of the vessel to which it belongs. But by the plan and position of our propeller and its accompanying properties, we are happily relieved from the necessity of adhering to a small diameter. The disk or hub of our propeller is equal in diameter to that of the vessel at the place where it is inserted, and is hollow; and therefore contributes to the buoyancy of the vessel, like other parts of it. It follows that what is usually meant by the term propeller, as applied to that agency in ordinary vessels, is here represented simply by the blades which are attached to the periphery of the hub or disk, and may be at pleasure no greater in surface or in number than in the ordinary propellers, or three or four times their power, as experience may dictate, and the use to which the vessel is to be applied may require. This large diameter of wheel enables this control of propelling surface to be had with a much shorter blade in the direction of the radii of the whole, and with a less per centage of length of blade in proportion to the radii of the wheel, thus causing each portion of the blade to move more nearly at equal velocities, from which results greater harmony of action between the different portions of the propelling blade, and consequently more efficiency. These advantages become greater and greater in our propeller, as well as in the ordinary side-wheel, as the diameter is increased.

ROSS WINANS,
THOMAS WINANS.

Baltimore, Md., January, 1859.

[The above comunication of Messrs. Winans does not alter the opinion we expressed of their novel steamer in No. 14—and since they expect the vessel to be ready for sea in a few weeks, we think nothing can be gained by a prolonged discussion of the principles involved in its construction.

We are content to await the actual results of a fair trial to determine the correctness or fallacy of our views.

The author of the above letter, however, has misapprehended the meaning of our remarks in regard to placing the propeller at the stern—abaft of fine water lines—and we cannot conceive how he has made such a mistake. The argument here presented in favor of the large propeller is just about as sensible as it would be to advocate an overshot wheel of 50 feet diameter for a 16 feet fall, in order *to obtain leverage.*]

### Speech of the Commissioner of Patents.

Some time since, the Commissioner of Patents, under the sanction of the Secretary of the Interior, invited several distinguished agriculturists from every section of our country to visit Washington, and act as an "Advisory Board of Agriculture to the Patent Office," for the purpose of promoting its efficiency in this important department. This Board convened on the first week of this year, and have held a most pleasing and important session. Their labors terminated on the 12th inst., and on bidding farewell to Commissioner Holt, expressing a sincere regard for his welfare, and tendering him their thanks for his courtesy, he responded in the following eloquent and able remarks:—

Mr. President and Gentlemen: The statement which has just been made, in regard to the labors in which you have been engaged, I have heard with the greatest satisfaction. I am sure that you will all receive—what you have so well deserved—the thanks of the whole country, as you certainly have mine, for the promptitude with which you have responded to the invitation of this office, and for the earnestness and zeal wfth which you have entered upon the duties assigned to you. I cannot, however, too deeply impress upon your minds our conviction that in point of fact your labors are but begun, and our trust that upon returning home you will still pursue them, and give us the result at the earliest moment practicable. It is our confident expectation that these results will tell upon the pages of the forthcoming agricultural report of this office, in such a manner as to challenge the respect if not the admiration of the public, and silence the clamor of those who have so ruthlessly assailed what they have so little understood.

It has been a source of unfeigned regret to me that the pressure of official duties has denied me the pleasure and instruction which I should certainly have derived from an attendance on your deliberations. I may be permitted to add that apparently the time has at length arrived for the agriculturalists of this republic to arouse themselves to a sense of their actual condition, and to a just estimate of the devoted mission with which they are charged. A pursuit which has given to the world a Cincinnatus, a Tell, and a Washington may well stand unabashed in every earthly presence. Uncounted millions, gentlemen, have been expended in building up and maintaining a gigantic system of manufacture, in enlarging the area of our commerce, and in guarding it alike from the perils of the deep, and the perils of the foreign foe. And yet we do all know that commerce and manufactures, in their very best estate, are but outpouring streams from the great fountain of agriculture—a fountain which is the nursery, too, of all those virtues upon which this republic rests as its only sure foundation, and without which, it may be safely affirmed, it could not exist a single day or a single hour—a fountain without whose vivifying and fertilizing influences every other domain of human labor and enterprise would wither away and become as waste and arid as the deserts of Sahara; and yet, strange to tell, this noble pursuit, which had its origin in the very bowers of Paradise, and which, in all ages and in all lands, has commanded—what it so richly deserved—the profound homage of mankind, is in our favored country far, confessedly far, behind those other great pursuits which engage the efforts and solicitudes of the public toil.

The reason is that we tread too indolently, too slavishly, in the paths in which our fathers walked. The plowman has permitted the steamer to career along the rivers and the locomotive to dash even across his fields without catching that irrepressible spirit of progress of which they are at once the tokens and the triumphs. Hence it is that the slovenly, reckless, impoverishing, and wasting system of tillage which belonged to the olden times still lamentably prevails. And hence it is that the farmers of our country, unlike those beyond the Atlantic, continue still rather to abuse than use our mother earth, approaching her bosom not gently, kindly, caressingly, but like some rough, unskillful surgeon, cutting and slashing with their instruments, and extracting from that bosom, thus mangled, rather the blood, the loss of which wastes life, than the milk that nurtures and sustains it.

The manifest remedy for all this is in the collection and the rapid and broad diffusion of practical, accurate, and scientific information in reference to the soils and the agricultural processes and products of our country, in giving to this information the most popular and attractive form possible, and in pressing it home upon the thoughts and sympathies of the farming classes throughout the nation; and I must say that I know of no more efficient or honorable instrumentality for that great work than the Board which I have now the honor of addressing; and when that work shall have been accomplished, and that information thus spread abroad pondered upon and appreciated properly, then, I doubt not, our farmers, like the tillers of the soil elsewhere, will resolve that not a furrow shall cross their fields, and not a seed enter that furrow, but under the guidance of those lights of science which, in this age of inquiry and intelligence, are everywhere leading the footsteps of every human enterprize. When that resolution shall have been taken and maintained, and not till then, can we expect to see here what the traveler in the Old World beholds—fields which have been cultivated more than two thousand consecutive years, and yet to-day are groaning beneath the weight of crops surpassing even those which are borne upon the richest alluvial soils that border the great rivers of your South and West.

I will not further detain you but to simply express to you my complete and abounding sympathy with this and every other movement which looks to the advancement and the elevation of agriculture. And I may be allowed to give to this expression the more emphasis, since, in other years, it was my own fortune to be, not a theoretic, but a practical tiller of the soil; and there floats not, sure I am there can never float down to me, from the wastes of the past, memories more steeped in the very fragrance of life than those associated with the green fields and breathing bloom of the flower garden of my native land.

I renew to you, gentlemen, the expression of my official and personal thanks, and wish you all, from my heart, a safe and pleasant return to your families and homes.

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## Notes and Queries

*** PERSONS who write to us expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

B. B. R., of Mo.—The reason why you find no recent information on the subject of yeast in modern books on chemistry is because the nature of fermentation is well understood, and the formula is laid down in every manual of chemical science. There is no "distiller's secret," except, perhaps, that of taking a small portion of the mother-yeast to induce fermentation. Yeast viewed chemically is composed of carbon 50·6; hydrogen, 7·3; nitrogen, 15·0; oxygen sulphur and phosphorous, 27·1, in 100 parts; and viewed atomically it bears a close resemblance to albumen (C40 H31 N5 O12 ⋈ P½ S2, Brande).

J. T. H., of Ind.—In Vol. X. of the SCI. AM., you will find much useful information about dyeing. You can also procure Smith's treatise on this art from H. Cary Baird, bookseller, Philadelphia.

C. R. J., of Conn.—The author of the "Vestiges of Creation" has never had the moral courage to reveal himself. A petrifaction is a body formed by the deposition of saline or stony matter in the pores of a vegetable or animal formation, the latter decaying as the deposition proceeds, and thus forming the mold of the petrifaction.

S. W. B., of Vt.—Wind moving at the rate of ten miles per hour, and acting on twelve square feet of sail surface of a windwheel, will exert about one-sixth of a horse-power. The power will not be different, whether acting on the long or short end of the arms. The wind strikes the surface horizontally, and is deflected at an angle. The Patent Office Report for 1857 is published. You will find a description of Blanchard's lathe for turning gun-stocks in Vol. II., SCI. AM., page 240.

H. H. R., of Texas.—You can purchase a knitting machine from Messrs. Aiken, of Franklin, N. H. In a short time, we hope to present an illustration of it in the SCI. AM.

D. F., of N. Y.—The exhaust steam from an engine may be conveyed 300 feet under ground to heat a building economically. In covering the pipe with wood, lay a stratum of lime mortar, mixed with hair, between the wood and pipe. You will find it an excellent and safe non-conductor.

D. N. & Co., of Balt.—The best composition known to us for preventing rust by salt water is red lead paint. Give the metal a very thin first coat, allow it to dry, then give other two successive coats. To arrest rust in iron exposed to the weather, apply a coating of hot linseed oil and allow it to dry.

M. B., of N. Y.—Your conclusions in regard to the explosion at St, Louis seems to be the same as those we set forth in a previous number of the SCIENTIFIC AMERICAN.

BULLION is informed that one million dollars in gold weighs 4,479 lbs., troy weight, or nearly 2¼ tons. The "American Farmer's Magazine," in a paragraph giving the above item, adds the following pertinent note:—"As weighty as this is, we have no doubt that, if the amount were offered to anybody who would lift it, there would be enough persons found ready to break their necks in the vain attempt."

R. K. B., of Va.—We do not, we regret to state, know where the paper felting for roofs can be obtained.

T. H., of Pa.—Your process of producing electrotype plates is substantially what is known as glyphography, invented in England about fifteen years ago, except that instead of the glass and black cloth beneath it, a copper plate, having its face stained black, is used in that process. This is covered with a white coating, and operated upon precisely like your glass. It was at first supposed by many that glyphography would supersede wood engraving, and it was hailed as a very important discovery; but practice has demonstrated that though it will produce very beautiful engravings, it cannot compete, in cheapness, with wood engraving.

THE term "volcano" is derived from the name of a heathen deity, Vulcan, who was supposed by the ancients to reside in Mount Etna, forging thunderbolts for the supreme god, Jupiter.

L. F. G., of Mo.—We regret to have to inform you that we do not think a patent could be obtained on your improvement in rotary engines. The revolving abutment wheel, with recesses for the pistons, is an old thing. You had better not spend your money upon it.

J. J. R., of Ind.—We do not think your locomotive speed regulator would be sufficiently reliable to be of any practical value, for the reason that it will be considerably effected by grades or even by accidental unevenness in the track. We, moreover, do not think it new. We have somewhere seen or heard it described long ago.

J. H. C., of Pa.—Yes; a patentee can recover, after the expiration of his grant, for an infringement which took place during the life of the patent.

GEO. W. DAVIDSON, of ——.—Had you given us your Post Office address we should have written you by mail. The specimen of a substance you sent resembles the jawbone of a donkey as much as anything; but we question if it is as valuable, notwithstanding it has the property of scratching glass or striking fire like a flint. We cannot furnish you with a description of Day's screw machine.

S. S. B., of Ala.—We have written you fully by mail. As we found no letters from you among our files we presume none have reached us. We mean to be prompt in all our answers to correspondents.

A. T. H., of Ky.—There is no reliable work which gives information in regard to millwrights. You must get your instructions from those who have had experience in the business.

D. N., of N. Y.—We do not think you can obtain brass stringing such as was once employed to run furniture. It is not used at present.

F. J. F., of N. Y.—We are unable to give you our correspondent's (W. A. G.) address as we have forgotten it amidst the multiplicity of communications.

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Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, January 15:—

T. K. W., of Conn., $25; D. F., of O., $30; B. B., of Me., $25; A. F. L., of N. C., $30; F. G., of N. Y., $25; F. & J. S., of Cal., $60; L. F. G., of Conn., $25; T. P. R., of Miss., $55; H. H., of N. Y., $225; P. L., of Me., $30; J. T., of N. Y., $30; C. & D., of Ill., $30; G. O. B., of N. Y., $25; J. P., of N. Y., $57; C. H. D., of Ill., $25; J. L. G. W., of Mich., $30; M. D., of Mass., $30; W. F. M., of N. Y., $30; W. H. G., of Del., $25; D. S., of Ill., $30; S. Y., of R. I., $25; D. S. O., of N. Y., $20; J. S. T., of Conn., $250; L. H. & R., of N. Y., $25; G. W. L., of Ind., $30; P. & B., of N. Y., $30; J. W. B., of N. Y., $25; J. H. T., of N. Y., $250; S. E. T., of N. J., $30; H. C., of Pa., $30; J. M., of Cal., $25; J. E. R., of N. Y., $10; T. S., of La., $35; S. W., Jr., of N. Y., $19; J. D., of O., $25; J. S., of N. Y., $30; J. H. S., of Md., $55; J. F. P., of N. Y., $25; W. H. C., of N. Y., $45.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, January 15:—

T. K. W., of Conn.; G. O. B., of N. Y.; J. B. F., of Wis.; D. W. H., of Mo.; F. G., of N. Y.; J. D., of O.; L. F. G., of Conn.; W. H. C., of N. Y.; J. R., of Conn.; J. W. B., of N. Y.; P. & B., of N. Y.; P. A. P., of N. Y.; M. & G., of Del.; O. S. O., of N. Y.; S. W., Jr., of N. Y.; L. H. & R., of N. Y.; J. F. P., Jr., of N. Y.; C. H. D., of Ill.; H. H. B., of Me.; A. M., of O. (two cases); H. R. K., of Vt. (two cases); W. & L., of Conn.; J. B. S., of Tex.


## IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office, 128 Fulton street, New York. We established, over a year ago, a Branch Office, in the City of Washington, on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

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**HOYT BROTHERS,** MANUFACTURERS OF patent-stretched, patent-riveted, patent-jointed, Oak-Leather Belting; Store, 28 and 30 Spruce street. Manufactory, 210, 212, 214 and 216 Eldridge st., New York. A "Treatise on Machinery Belting" is furnished on application, by mail or otherwise—gratis. 16 12*

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**FOR SALE**—AT A BARGAIN FOR CASH, ONE new iron planer, which will plane 13 feet in length, 38 inches in width, and 36 inches in hight; weight, 10,000 lbs. Address WM. T. SCRANTON, New Haven, Conn. 20 4*

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**GREAT FAIR AND EXHIBITION OF** the AMERICAN UNION for Inventors, Manufacturers, Mechanics, &c., at No. 620 Broadway, New York. This Fair is now open to the public; but inventors and others are allowed to send in articles for competition at any time previous to the 20th of January next. Diplomas, &c., will be awarded during the month of March, but the Exhibition will be continued during the year 1859, at No. 620 Broadway. Address communications to J. L. RIKER, Director, American Union, New York. 17 4t

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**WHEELER & WILSON'S SEWING MA-**CHINES—Price greatly reduced for New Style, price $50. Office, No. 343 Broadway, New York. Diagram of the Lock Stitch made by this Machine. This



is the only stitch that cannot be raveled, and that presents the same appearance upon each side of the seam. It is made with two threads, one upon each side of the fabric, and interlocked in the center of it. Send for a circular. 6 tf

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**PATENT RIGHT FOR SALE.**—THE BEST suction pumps now in existence are those of Henry Zeug, of Elizabethport, N. J., which have been illustrated and described in No. 17 of this paper. They are of immense value for ships' pumps, one man being able to operate the largest one of them and to lift the water to any hight. They never get out of order. For fire engines they are invaluable, as they give out 50 per cent more water and require 50 per cent less power than common force pumps. This is done by perfectly excluding the external air, and as no air-chamber is required no pressure of air is to be overcome. These pumps are applicable for hydraulic presses, with the same advantage. For particulars, please address the patentee, HENRY ZEUG, Elizabethport, N. J. 18 3

**A MESSIEURS LES INVENTEURS**—Avis Important.—Les inventeurs non familiers avec la langue Anglaise, et qui prefereraient nous communiquer leurs inventions en Francais, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront recues en confidence. MUNN & CO. Scientific American Office, 128 Fulton Street, New York.

**Zur Beachtung für Erfinder.**

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an Munn & Co., 128 Fulton Str., New-York. Auf der Office wird deutsch gesprochen.

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**FOR SALE**—SECOND-HAND MACHINISTS' TOOLS—One large boring mill for car wheels, weight, 4,000 lbs.; cost $600—price, $250. One large boring mill (English) for car wheels, weight, 2,000 lbs.; cost $400—price, $100. One screw lathe, 8 feet bed, 20 inch. swing, weight, 1,500 lbs.; cost $350—price, $150. Also one 10 ft. planer; cost $850—price, $550. Apply to GEO. S. LINCOLN & CO., 10 13t* Hartford, Conn.

**IRON PLANERS AND ENGINE LATHES** of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 14 13

**WOODWORTH PLANERS**—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26


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# Science and Art.

**Preventing Thin Steel Tools from Bending.**

A correspondent—Eugene Duchuny—informs us that the following composition will prevent long thin steel tools from becoming crooked during the tempering process :—

Dissolve one ounce of gum arabic in a pint and a half of hard water, which should be contained in a long narrow vessel. The tool is first heated in the fire, then plunged into this liquid, and held therein until it is quite cold. He says, we may rely upon it that thin steel tools, thus treated, will be perfectly straight, and will not crack.

We hope this receipt will be useful, and that the object sought to be effected by it will be accomplished. We, however, cannot give a reason why a solution of gum arabic can prevent long thin steel tools from becoming crooked during tempering any more than a bath of cold water. Such tools generally warp in the heating process, not in the cooling bath. Articles of thin steel heated in a bath of molten lead by holding them vertically, then immersing them vertically, but gently, in cold water, generally retain their shape if the operation is skillfully conducted. If thin steel blades are heated in oil at the boiling point, then cooled in a strong solution of potash, they are not so liable to become crooked. This process, however, only produces a soft temper.

**Variation in Vital Heat.**

The French Academy has awarded a prize to M. Roger, for a "Memoir on the Temperature of Children." In the investigations of this subject, the author has made more than a thousand experiments. At the moment of birth the temperature of the infant is forty degrees Centigrade—that is, equal to that of the medium in which it lived ; but it soon decreases to thirty-five degrees. In the following years it varies from thirty-six to thirty-eight degrees. The typhoid fever is the sickness in which the temperature is the highest, varying from 42-5 to 41 degrees ; in pneumonia it is thirty-nine degrees on an average, and in eruptive fevers it varies with the periods of the disease. In *meningitis* there are the greatest differences of temperature, depending more on the individuals than the severity of the disease. In only one disease—the hardening of the cellular tissue—is there a very great decrease in the temperature ; in nineteen children, the thermometer under the armpit marked thirty-three degrees ; in seven, less than twenty-six ; in two others, twenty-three degrees, and even twenty-two.

**New Hay Elevator.**

To those of our readers who may not be conversant with agriculture and its associate pursuits, it may seem unreasonable for us to present illustrations of implements and machines to our readers when the thermometer is below zero (as it is while we write), and the whole earth is spellbound in an icy grasp. But it is just at this period that the farmer is laying his plans for the coming spring and summer, and is determining upon the machinery he will employ for cultivating and harvesting his crops, and the manufacturer is busy at work making the implements likely to be in demand with the opening year.

The elevation of hay and similar substances from carts into barns or on to stacks, or from the ground into the cart for transportation, requires to be done quickly by a large fork or elevator, and as this cannot be easily manipulated by the hand alone, it has been made in some measure a mechanical device, and the parts have been so arranged as to do away with the necessity of the throwing and twisting that is so fatiguing.

The subject of our illustrations is a hay elevator, the invention of C. E. and J. N. Gladding, of Troy, Pa., and which was patented May 11, 1858.

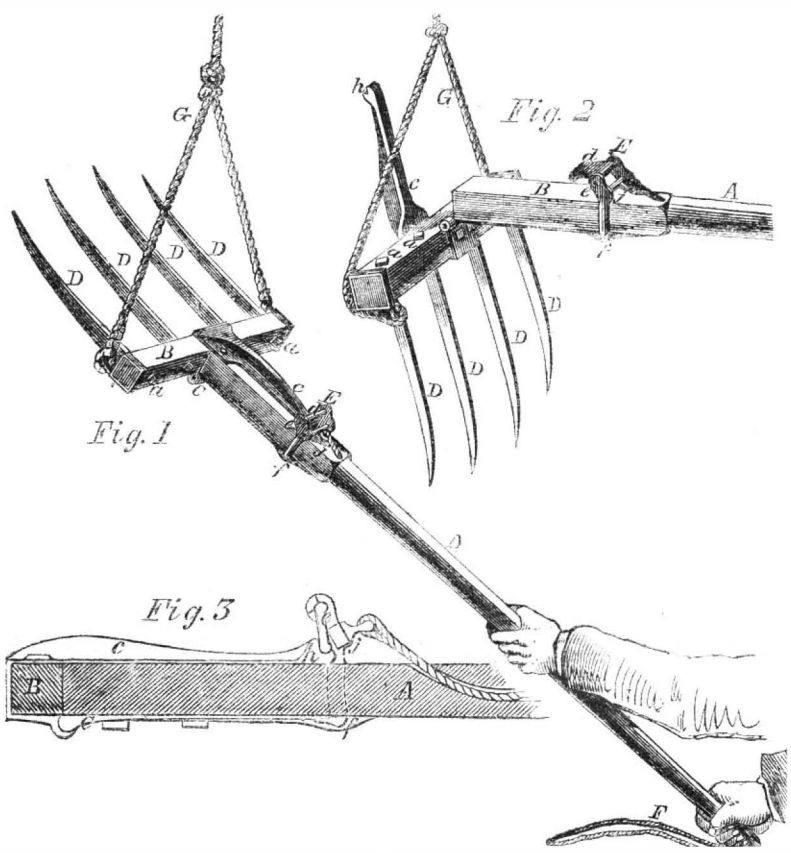
Fig. 1 shows the elevator as it would appear when lifting hay.

A is the handle, to which is hinged at C a crosshead, B, provided with prongs, D, secured in it by screws and nuts, *a*. G is the rope by which it is lifted. the rope being passed over a pulley or similar contrivance to assist in raising the elevator. To the top of B is attached a tongue, *c*, which has a small notch, *h*, in its end ; in this notch the catch, *d*, that is suspended in the catch frame, E, by pivots, *e*, fits and holds it on. The catch frame, E, extends around the pole or handle, it being kept in position by the spring, *f*, on the underside of the pole. A cord, F, passes through the pole, and is attached to the spring catch, E, by a ring, *j*.

Fig, 2 shows the elevator in the position in which it discharges its load, and Fig. 3 is a section.

The operation is simple, When the hay has been elevated to the required hight, the

## GLADDING'S HAY ELEVATOR.

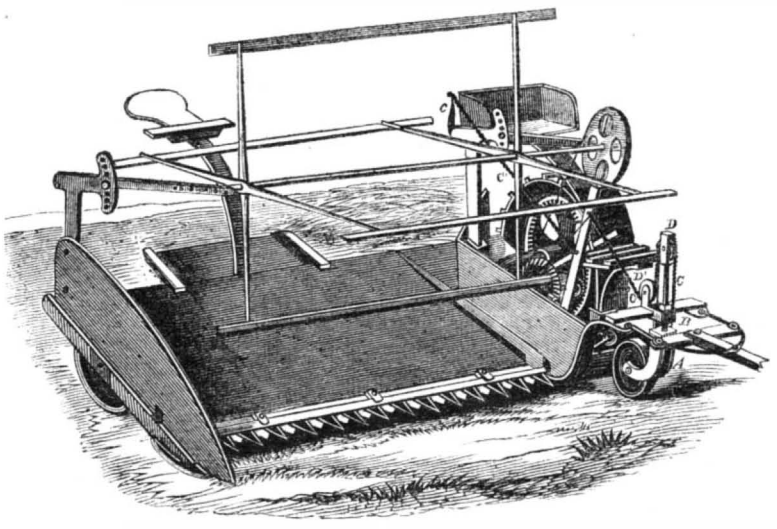



cord, F, is pulled by the attendant, and this pulls back the catch frame, E, and releases the catch, *d*, from the notch, *h*, allowing the prongs to assume a vertical position, and allow their contents to fall. On lowering the whole, by pressing on the handle, A, the prongs and crosshead are easily placed in position, the spring, *f*, allowing sufficient play of E to permit *c* to fall back to the position shown in Fig. 1, and retain it there by *d*. With this fork a tun of hay can be unloaded in from three to seven minutes, thus saving much hard labor, and facilitating the securing of hay when properly cured ; and by its aid hay may be elevated and discharged in comparatively a small place, for the fork being allowed to drop in order to discharge its load, the tilting of the handle, as in ordinary forks, for the same purpose is dispensed with. Hence with this fork, hay can be unloaded with the utmost facility into shed windows, or beneath purline beams, or into places where ordinarily the horse fork cannot be used. It can also be used in the field for stacking.

It took the first premium at the Pennsylvania State Fair at Pittsburgh, 1858, and also the first premium at the New York State Fair at Syracuse, 1858.

Any one wishing further information concerning this useful implement can address the assignee, C. E. Gladding, of Troy, Pa.

## JEROME'S COMBINED MOWER AND REAPER.



The ordinary and necessary parts of a mowing and reaping machine are so well understood by the majority of our readers, that in calling attention to the subject of our engraving it will be unnecessary to describe these features, so we shall only call attention to the special improvements that characterize this machine. The great difficulty of fine or wet grass clogging the guards is entirely overcome, by improved steel fingers with cutting edges, which are riveted upon the upper side of a wrought iron finger bar, to permit the cut grass to pass freely back, without lodging on the bar, while the cutting edges are of such a form that they cannot be clogged in any kind of grass, whether it be wet or dry, not even under the knife, but work perfectly clear under all circumstances ; as a consequence of this freedom from clogging, and of the cutting edges on the guards forming a shear cut with the vibrating motion, the draft of the machine is light, and the work is well performed.

The whole weight of the machine is carried upon wheels, so that there is no drag upon the ground, and it avoids side draft on the horses, and no more weight upon their necks than there would be on a wagon pole.

The cutting apparatus is carried upon a large caster wheel, A, in front of and near the line of cut, while by means of a spring attached to a hoisting lever and flexible joint in front or near the caster wheel shaft, the cutter bar can adjust itself to the inequalities of the ground, and the driver, while sitting on his seat, and the machine is in motion, by means of the spring and lever chain, C, and pulleys, D D′, in connection with the castor wheel shaft, B, is enabled to raise the knife with ease, to pass over stones and other obstructions to cut higher or lower, and to throw in and out of gear with a spring and check, which is very convenient, and to pass from field to field as easily as a cart. The mower is changed to a reaper in a few minutes, the cant-board being taken off, and a loose platform and raker's seat being put in, and the reel is raised. The grain is discharged in good condition for binding, out of the way of the next round, so that a whole field may be cut without moving the grain. The platform can also be arranged to discharge the grain when necessary at the back of the machine. The reel may or may not be used as the grass requires.

It is the invention of G. F. and M. Jerome, of Mineola, L. I., and patents were obtained Sept. 28, and Oct. 5, 1858. Numerous certificates from able judges regarding the efficiency of these machines are in the hands of the inventors, who will be happy to furnish any further information.

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INVENTORS, MILLWRIGHTS. FARMERS AND MANUFACTURERS.

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